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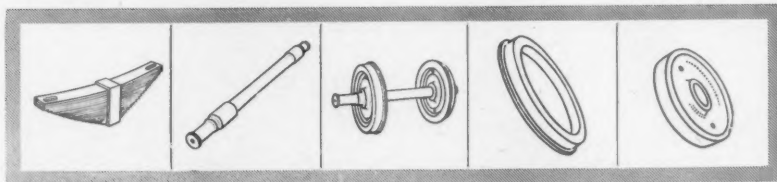
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Fuel Oil Policy

THE immediate outlook for oil and petrol supplies seems rather more cheerful than was hoped even a few weeks ago. The influx of oil into the United Kingdom recently has been at almost 80 per cent of its normal level before the closing of the Suez Canal. In an address to the National Production Advisory Council for Industry last Friday, Lord Mills, Minister of Power, expressed a hope that these rates would be maintained throughout the first quarter of the year. Nevertheless, it will be some time before the Suez Canal is clear for large tankers, and even then the position of British and French Canal users will almost certainly be difficult. Unless there is a general improvement in international relations—and there are few signs of it at present—oil may continue to be a catspaw of politics, with its supply and price depending on factors outside normal commercial control. In this situation, which may or may not be as bad as it appears, it is being questioned whether British Railways are wise to put their faith in diesel traction. As far as main-line trains are con-

cerned, diesel traction is not intended, at least on lines with heavy traffic, as more than a half-way stage towards electrification. The amount of fuel used elsewhere by multiple-unit diesel trains, railcars, and shunters, is a comparatively small addition to the total oil imports of Britain. There may be something to be said, in present circumstances, for acceleration of the electrification programme using power produced from coal or atomic energy with its smaller transport problems. There is no doubt that the electrical industry would rise to the occasion. The same political factors might also justify electrification on some lines for which diesel at present is envisaged as the ultimate permanent motive power. In that event, an intermediate stage of diesel traction would still be necessary, and should be sufficient to give diesel locomotive builders the much-needed home market which would enable them to develop production methods which would assist successful competition in world markets.

Scottish Region Developments

THE important contracts announced last week by the Scottish Region of British Railways, details of which appear on another page, represent a further step towards the improvement of railway facilities in Scotland. Modern colour-light signalling is to be installed at Glasgow Central High Level station, and a similar signalling system is to be introduced at the new marshalling yard under construction at Millerhill (Edinburgh), where work on the ground has been making progress for some time. A contract has been placed for various civil engineering works connected with the building of the new marshalling yard at Perth. This yard will replace the existing yards and ensure greater efficiency and economy in working. With the yard at Thornton (Fife), Millerhill and Perth make up the three most important marshalling yards to be built in Scotland under the modernisation plan. A new colour-light signalling scheme is to be installed at Perth, where the work of 13 signalboxes will be concentrated in a single power-operated box. The placing of a contract for two overhead electric travelling cranes for the new wagon repair depot at Townhill Junction (Dunfermline) indicates that the work of construction at this depot is now well in hand. These and other works are ancillary to the general improvement in passenger and freight working already apparent in the Scottish Region.

High Output of Machine Tools

ALTHOUGH full figures for the year are not yet available, it is evident already that the output of the machine tool industry in 1956 was appreciably greater than in 1955. Deliveries in November improved for the third month in succession and totalled £7,930,000. The increase in deliveries was mainly to the home market. The total of new orders in November was £6,860,000 against £6,840,000 in October. There was a fall in home orders from £5,110,000 to £4,490,000, but this was more than offset by a rise in export orders from £1,730,000 to £2,370,000. The improved output of the industry has exceeded the flow of new orders, so that at the end of November the outstanding order-book had fallen to £100,320,000, representing some 12 months' deliveries at the present rate. This is considerably better than the £97,390,000 at the end of November, 1955, but some of the improvement must be attributed to increased prices. One effect of the contracted order-book has been to reduce delivery periods for many machine tools and to halt the tendency towards extended delivery times for others, which should go far to increase the attractiveness of British products in overseas markets.

Indian Operating Performance in 1955-56

THE efficiency of operation of the Indian railways, for many years remarkably high under British management, appears to have been well maintained, and a quick recovery made from the dislocations caused by Partition

in 1947. Provisional figures for the year ended March 31, 1956, are reported to show that the index of efficiency in wagon user on the combined broad-gauge systems of the seven railways in the Republic of India, which account for 80 per cent of the annual goods traffic on broad, metre, and narrow gauges, improved by 54 per cent over the lowest post-Partition level in 1947-48, and exceeded by 20 per cent the highest level recorded during the last war, in 1942-43. During 1955-56, net ton-miles per wagon-day rose to 541 against 451 in 1942-43, and 351 recorded in 1947-48. Wagon-miles per wagon-day steadily improved from 33.1 in 1948-49 to 46.6 in 1955-56, an increase of 41 per cent. During March, 1956, this figure advanced to 48.9.

Demands of the Second Five-Year Plan

AN increase of 10 per cent in railway operating efficiency is assumed as a basis for the Second Five-Year Plan, and the total financial allocation to the railways was determined after a suitable cut on this account. Under the impact of large-scale industrial development, the average distance of consignments tends to increase considerably; but the Railway Board points out that no provision for this additional demand on wagons and other railway resources has been made in the Plan, so that even greater efficiency is needed. The Board has asked chambers of commerce and similar bodies to co-operate in improving wagon turn-round, and has reduced to 5 hr. the "free time" allowed to railway users for loading and unloading; it has also reduced the release time of service wagons from 6 hr. to 3 hr. for coal and from 6 hr. to 5 hr. for other railway material; and steps are being taken to reduce detention in collieries and other sidings and in port areas. Loading and unloading at stations have long been hampered by the use, amongst other modes of transport, of bullock carts. It will be interesting to see the effects of the mechanisation of road transport.

Overseas Railway Traffics

CANADIAN Pacific Railway Company net earnings for December last were \$4,003,558 compared with \$4,448,174 the previous year; the aggregates for the period January 1—December 31 of 1956 and 1955 were respectively \$41,335,827 and \$37,127,791. Paraguay Central Railway receipts for the week ended January 25, 1957, were G.1,495,442, an increase of G.191,192 on the corresponding week of 1956. Receipts continued in general to be considerably better than those of the previous year. At January 25, aggregate receipts from July 1, 1956, amounted to G.57,630,675 against G.40,350,344 for the corresponding period of 1955-56. Costa Rica Railway receipts for December were colones 1,438,185 compared with colones 1,878,649 for December, 1955; the aggregate receipts for the five months July—December were colones 9,305,069 (9,921,286). International Railways of Central America net revenue from railway operations in December was \$915,537, compared with \$612,742 in December, 1955. The aggregate net revenue from railway operations for the period January 1—December 31, 1956, was \$3,388,342 (\$3,347,640).

Tourist Traffic in Europe

INTERNATIONAL road transport in Europe, as an aid to the tourist industry, "has not been given the encouragement it deserves," according to the Tourism Committee of the Organisation for European Economic Co-operation, whose views are recorded in a recent study, "Tourism in Europe." The committee, while, it states, "in no way underestimating the importance of rail travel and the large market available to the railways," feels that the importance of other forms of surface transport needs greater consideration. The growth of motorcoach and private car traffic is shown in some impressive figures: it is reckoned, for instance, that international road transport increased by 20 per cent in 1950-55, and that in 15 years it will have trebled compared with 1954. The com-

mittee rightly urges relaxation of frontier controls of road traffic—which it might equally well have urged for railways, despite many improvements in the latter sphere, except at some packet ports and land frontier stations. All forms of public land transport tend to be overloaded in the—unhappily—short peak tourist season, but the fuel oil shortage, if it persists, may alter the pattern. Meanwhile, the European railways are constantly improving the comfort and speed of travel.

British Railways Holiday Guides

ONCE again, the colourful covers of the five holiday guides issued by British Railways are on the book-stalls. The division into areas—Scotland; Wales & North West England; Eastern England; South West England; and South & South East England—is the same as in previous years and the price remains at 1s.—which is excellent value for money. The standard of production is as high as ever. Postcards have been included, already addressed to the Chief Commercial Manager and requiring only that details should be completed, so that further information can be obtained on any desired point. We suggested last year that these cards should be business reply cards, and we repeat that suggestion now. Such a point as this might be the critical one in securing traffic. The information is not of the type which would be requested by other than bona-fide holidaymakers. There are small maps of particular areas and a folding railway map of the British Isles in each volume, and descriptions are given of every resort of note. The illustrations are many and attractive, those in the Eastern England guide scoring particularly in being divided into two sections, against the one section in the other guides.

Pneumatic Tyres on the Paris Métro

PNEUMATICALLY cushioned wheels running on standard railway track have been known for many years, but the new trains on the Paris Métro, described on another page, use road-type tyres running on their own pathways, each bogie being kept in place by horizontal wheels, also fitted with pneumatic tyres, which bear against guide rails serving also as the positive conductors. The ordinary rails are retained and carry the return traction and signalling currents. Inside the running wheels are steel wheels with extra deep flanges, carried normally clear of the ordinary rails but ready to take up the load should a tyre fail. The track circuits, the working of which remains in principle unaffected, are shunted by the negative shoes running on these rails. At points and crossings, where there must necessarily be gaps in the guide rails, the vehicles are kept in line by the deep flanges on the safety wheels following the ordinary rails and the operation of the points remains undisturbed. This system is the result of experiments carried out during the last few years on a short piece of line and, besides practically eliminating noise, will, it is claimed, bring appreciable benefits, both operating and economic. It was officially inaugurated on November 8 on Line 11 (Châtelet-Mairie des Lilas).

Iron Ore Wagons for Scotland

BRITISH Railways, in co-operation with Colvilles Limited, have designed a special 33-ton capacity iron ore wagon. Altogether, 270 of these wagons are being built at the Shildon Wagon Works of the North Eastern Region, and will be used in connection with the firm's £20 million expansion project to provide a much needed increase in steel production. They will be used for the conveyance of imported iron ore from General Terminus Quay on the Clyde, to the firm's steelworks at Clydebridge, Rutherglen, and Ravenscraig, Motherwell. The wagons are of all-steel welded construction with $\frac{1}{4}$ in. thick mild steel, giving a capacity of 730 cu. ft. The bodies have hopped sides at an angle of 50 deg., and fitted with a single-bottom door giving an opening of 9 ft. 3 in. by 3 ft. The door can be operated from one side,

and springs are fitted to assist in closing after discharge. Vacuum, and hand brakes are fitted, and the buffing and drawgear are of the Continental type. The length is 19 ft. over headstocks, and the extreme height from rail is 10 ft. 8 in. The first of the completed wagons was recently inspected at the Shildon Wagon Works, to which event reference is made elsewhere in this issue.

Commercial Teleprinter Network Inaugurated

AS part of the modernisation plan, and to facilitate the speed-up of communications between the districts in the Region, the first teleprinter network for commercial purposes on British Railways has been introduced in the London Midland Region. The teleprinter apparatus was manufactured by Creed & Co. Ltd. This gives immediate contact between the Chief Commercial Manager, District Goods Manager, and important freight depots. The installation is particularly important for the transmission of rates quotations, the tracing of missing goods, advices of special transits and for the expediting of instructions. District Goods Managers at Broad Street (London), Liverpool, Birmingham, and Manchester are linked by a relay retransmission point at Birmingham, and 20 goods stations within the four districts can be reached by Desk Fax machines. Goods Managers at Bolton, Warrington, Wolverhampton, and Chester are connected with the teleprinter network by means of Desk Fax but will be connected later by teleprinter, as also will the District officers and principal goods stations in the Stoke, Derby, Leicester, Carlisle, and Barrow districts. This network will then embrace the whole of the London Midland Region.

Winning Public Confidence

THE debate in the House of Lords last week, a report of which appears on another page, on the Second Reading of the Transport (Railway Finances) Bill, which empowers the British Transport Commission to borrow up to £250,000,000 during the transitional period while the modernisation scheme for British Railways is being carried out, seemed to illustrate the considerable uneasiness, amongst people with differing, or without marked political affiliations, as to the expediency of the Government proposals. There are misgivings as to whether the loan to the Commission is a subsidy in disguise and, indeed, whether the spending of as much as £1,200,000,000 on modernising the railways can be justified. The fact that these fears have no real ground, provided that all concerned co-operate in efficient implementation of the plan, does not alter the fact that British Railways are the object of a good deal of criticism, not all of it from those who are inveterately hostile, at a time when, it might have been hoped, they would be enjoying public esteem after seizing the opportunity for handling increased traffic presented by the oil shortage. For the Government, Lord Mancroft, Parliamentary Secretary to the Ministry of Defence, carefully explained the provisions for repayment of the loan and of interest. That the loan did not amount to a subsidy was made clear by Lord Hurcomb, who pointed out that the principle embodied in the Transport Act of 1947, that the nationalised transport undertaking must pay its way—with the difference that under the present Bill the basis of being self-supporting—might be regarded as maintained if the balance were achieved not, as in the Act of 1947, "taking one year with another," but taking one decade, or rather more than a decade with another. The alternative, he rightly stressed, would be an outright subsidy, to which there are very strong objections.

The feeling of uneasiness seems to have been increased by the events of the past few weeks since the rationing of fuel oils began. There has been an increase in railway traffics, as the latest figures of receipts show, but exactly how great, in terms of tons and passengers conveyed and of distances, the figures are not yet available to show. On the other hand, despite a hitherto mild winter, there are misgivings as to the efficiency with which British Railways have met the challenge offered by the need to handle the

extra traffic. We believe that many of these anxieties have no real basis, and that much of the criticism is ill-informed or unfair. Nevertheless there are many complaints of over-long transits for freight, for instance, and of passenger train unpunctuality. It is impossible, without details, to assess their validity, but only to note they seem frequent. A good many people, moreover, who have been obliged during the past weeks to consign goods, or to travel, by railway, have not found the service given attractive enough to make them wish to continue after oil fuel restrictions are relaxed.

It is undoubtedly true that, in the face of many difficulties—among them the commencement of work, under the modernisation scheme, on major electrification and civil engineering projects which cause traffic delays—British Railways are going out to obtain, and handling, a great deal of traffic with efficiency and despatch—export traffic, for instance, to ports. With passenger traffic, it is clear that vigorous efforts are being made to improve comfort and punctuality, and it is hard to see what more can be done except persevere, bearing in mind the importance of staff morale. It is in freight traffic and, more particularly, merchandise traffic, that the greater difficulty lies. Not only must a reluctance to use the railway—often based on ignorance of what the railways can do—be overcome, but steps must be taken to ensure that rates are quoted promptly, and that traffic is handled expeditiously. There is surely scope in the case of both passenger and freight traffic for even closer co-operation than at present between the commercial and operating departments, and as a longer term measure, for revision of the whole question of salaries. The fact that implementation of the modernisation plan is only beginning need be no more than a handicap. The most important factor is undoubtedly the human element. Whatever the present amount and state of equipment at their disposal, railwaymen, if they really do their utmost, can still enable the railways to profit by their present opportunity, and can inspire confidence in their ability to justify the great sums of money to be spent on them.

The Changing Scene in West Africa

THE ability of the railways in the West African territories to amend their fare scales to suit varying changing conditions, compared with the restrictions which obtain in this country, was one of the points stressed by Mr. W. H. Salkield, formerly General Manager of the Gold Coast Railway & Harbours Administration, in his recent paper to the Ackworth Society of the London School of Economics & Political Science entitled "Looking back on Thirty Years' Service with the Gold Coast and other Government Railways." After 40 years' railway service, 30 of them in British territories in West Africa, and 10 in Britain, Mr. Salkield can speak with authority. In Sierra Leone, he pointed out, there was no question of capitalising the railway and no sinking or renewal funds. There was direct control of revenue and expenditure through the General Manager to the Financial Secretary to the Central Government. Losses were made good by the Treasury and profits theoretically—in fact, there were none to the best of the author's recollection—paid over to the Treasury. One reason for this loss was the extraordinarily difficult terrain traversed, and consequently the construction of the line, which meant overheads out of all proportion to the revenue. He goes on to mention that on the Gold Coast, in 1946 the accounts were completely separated from those of the Central Government, the railway administration standing on its own feet, with the General Manager presenting his own budget to the Assembly and the administration responsible for its existing loans and raising money for new capital works.

Discussing the great growth of the timber trade in the Gold Coast and its impact on the existing railway and harbour facilities, he shows that the increase was caused by the development of timber forests and the shortage in U.S.A. and U.K. after the end of the last war. Great strain was placed on the railways which necessitated quick

action. In 1947, 20 additional locomotives and 200 low-sided wagons were ordered; two new long wharves were built and cranes facilities were increased. In 1949 it was realised that even this was not enough and a further 15 locomotives and 100 high-sided wagons were ordered; also a committee was set up to share out rail carrying capacity. The reasons that bolster wagons were not ordered for carrying timber were that the logs when cut into standard lengths could be easily loaded into open wagons, and also because the sided wagons could be common-users to carry other traffics such as bauxite, manganese, coal, and engineering ballast, which system materially assisted to reduce empty vehicle mileage.

On the problem of fares, to which, he believes, no real solution has yet been found, he maintains that the former colonial administrations "were not so hidebound by regulations, Acts of Parliament, and rates tribunals" as in Britain; the railway administration could "juggle" with fares to suit local conditions. Commenting on the effect of road competition on the railway, he considers that the suburban services were as poorly supported as those in this country. In 1954, an experiment was made on the G.C.R., and fares were reduced in certain suburban districts, within a radius of 40 miles, from a basic 1½d. to ¾d. a mile. Fares over some of the longer journeys were recast on a tapering basis ranging from 1½d. to ¾d. a mile. Within a month, without increasing the number or strength of the service, passenger journeys in these areas increased by 180 per cent, which hit the road operators hard. This, surely, is a result worth careful study in this country—particularly when oil fuel supplies are fully restored, with the consequent tendency for the railways to lose the present increased passenger traffic.

Other matters with which Mr. Salkield dealt as General Manager of the Gold Coast Railway were the provision of adequate locomotive coal in a country supplied entirely by sea and the conversion of locomotives to oil-burning—in which the G.C.R. was something of a pioneer among railways in tropical countries—before ordering the first batch of diesel-electric locomotives. He was also faced with the problems inherent in the establishment by the Government of railway trades unions on the Gold Coast, and points out that the scheme has been most successful and that in general good feeling has prevailed among railwaymen; strikes have been "more boisterous than dangerous." With previous experience of railway docks in Britain—at the King George Dock in Hull—Mr. Salkield played an important part in the planning and administration of the G.C.R. & H. harbour of Takoradi.

He stated his opinion, after giving his paper, that with the present trend to Africanise as many railway posts as possible, there was little to encourage the young European engineer to take up a position in Ghana (as the Gold Coast will be known), as without pensionable terms it was impossible to contemplate a career. It may be, however, that in the future, the present attitude towards the employment of Europeans will change and that conditions will be offered which will again attract qualified young men from this country to this important sphere of railway activity.

Advantages of Hydraulic Buffers

THERE has been a good deal of research into the improvement of railway wagon buffers recently, and the article "Hydraulic Buffers and the Modern Wagon" contributed by Mr. D. L. Turner, Assistant, Engineering Division, British Railways Research Department, to the December, 1956, issue of *British Transport Review* is valuable in that it gives some of the facts needed for intelligent discussion. When two wagons collide, he points out, there is a sudden change of speed at the moment of impact. The size of the force acting on the wagons depends on how long the "moment" of impact lasts. The longer the impact can be made to last, the smaller is the force. The force on the wagons is at its smallest if it is constant for the whole of the impact. The main purpose

of buffers can therefore be described as making the impact last for as long as possible and remain as constant as possible during that time. Trouble begins with wagons fitted with standard spring buffers when the speed at impact is more than 4 m.p.h. At such speeds the buffer is pushed right home and there is a solid metal-to-metal contact. From this point it is the springiness of the underframe rather than that of the buffer which counts. The "Collision" (Duplex) buffer gives only a limited improvement because the additional spring which comes into operation at the end of the stroke does not have time to retard the wagon much before it also goes solid.

In Mr. Turner's opinion, the present design of buffer is quite inadequate for modern usage, but a new approach to the problem has been made possible by developments in hydraulic shock-absorbers. The hydraulic buffer automatically produces a steady retarding force of such a value that, whatever the speed of impact, the wagon is brought to rest as the buffer-stroke is completed. These buffers also produce a very low recoil. With the spring buffer, the recoil speed is nearly as great as the speed of impact, but with the hydraulic buffer the force drops to nothing very soon after the instant at which the wagon comes to rest. One property not possessed by the hydraulic buffer, which would be needed in the ideal buffer, is the ability to automatically adjust itself to variations in the mass of the wagon. In practice it is possible to make a satisfactory compromise between full and empty wagons, but it may be necessary to have more than one type to cover the complete range of wagons in use on the railways.

In marshalling yards, the biggest problem is to make wagons run far enough down the sorting sidings without colliding at too high a speed with the wagons already there. This is because wagons differ in their rolling resistance. Modern yards are being planned to release wagons from the retarder with a speed which takes into account wagon resistance and the distance to run. There is still some doubt, however, about the accuracy of measurement of running resistance, and shunting will be needed also in smaller yards. Hydraulic buffers make it possible for the safe speed of impact to be raised from something over 4 m.p.h. to nearly 10 m.p.h. Present-day marshalling yards already work with impact speeds of 10-12 m.p.h. and a survey carried out at one hump yard showed that 4 per cent of impacts were at speeds of more than 10 m.p.h. The advantage of this higher safe speed of impact is brought out by the energy of the wagon. The kinetic energy of a wagon moving at 10 m.p.h. is more than six times as much as that of a wagon moving at 4 m.p.h. The maximum allowable error in estimating wagon resistance in an automatic yard is thus increased six times if the safe buffing speed is raised to 10 m.p.h.

Hydraulic buffers also have a part to play in the reduction of shock in trains fitted with continuous brakes. At present, because of the comparatively long time taken for brakes at the back of the train to be applied, the rear of the train catches up the front part and compresses the buffers. When the brakes at the rear come on, the buffers expand, pushing the rear of the train away again. The couplings tighten, and the rear of the train is given a snatch. The surge may travel up and down the train more than once. Because hydraulic buffers destroy the energy of impact, instead of storing it in the springs, recoil is slight and surges are almost eliminated. The improvement is so great that after one series of trials it was suggested that if the wagons had hydraulic buffers it might be safe to run all continuously-braked trains with "instant" couplings. The advantages of hydraulic buffers in reducing shunting damage are readily apparent.

The fitting of all wagons with continuous brakes raises the question of the type of coupling to be used. Hydraulic buffing can assist in the problems met where unconverted wagons buff at the sides and converted wagons in the centre. Mr. Turner recalls that the majority of wagons have longitudinal members which take the drawbar pull and the force of snatches, which may amount to tension forces of 60-100 tons. If, with the use of hydraulic buffing, an automatic coupler could be designed which would limit

forces to this value, the problem would be almost solved. The wagon could be converted by fitting the new coupler between the centre longitudinal and the centre couplers could buff directly against the headstocks of unconverted wagons.

British Transport Commission Traffic Receipts

It could not be expected that the passenger receipts of British Railways in Period I, the four weeks ended January 27, 1957, would reach the high levels of the previous period, which included the Christmas holiday traffic, already affected by the fuel oil shortage. Nevertheless, the £8,942,000 recorded in Period I was £1,627,000 more than in the corresponding period of 1956, a much greater increase than in Period 13 of last year, when the advance on the previous year was £1,027,000. This shows that British Railways normal, as opposed to holiday, passenger traffic was still expanding in these four weeks—possibly as motorcar owners came to the end of their stocks of petrol. London Transport railway and road receipts also showed very satisfactory improvements on the previous year and on the previous period. Provincial and Scottish bus receipts also reflected the greater use being made of public transport. Passenger shipping receipts, though still at a high level, fell slightly from last year, possibly as a result of a reduction in the number of cross-Channel services.

	Four weeks to January 27		Incr. or decr.
	1957	1956	
	£000	£000	£000
Passengers—			
British Railways	8,942	7,315	+ 1,627
London Transport:			
Railways	1,888	1,689	+ 199
Road services	4,630	4,059	+ 571
Provincial & Scottish buses ..	4,309	3,612	+ 697
Ships	236	238	— 2
Total passengers	20,005	16,913	+ 3,092
Freight, Parcels & Mails—			
British Railways:			
Merchandise & livestock ..	9,395	8,009	+ 1,386
Minerals	4,413	4,108	+ 305
Coal & coke	10,646	9,945	+ 701
Parcels, etc., by passenger train ..	3,586	3,231	+ 355
Collection & delivery, etc. ..	1,005	939	+ 66
Total freight British Railways ..	29,045	26,232	+ 2,813
Others*	3,947	4,153	— 206
Total Freight, Parcels & Mails ..	32,992	30,385	+ 2,607
Total	52,997	47,298	+ 5,699

* Inland waterways freight, road haulage, and ships

The best guide to traffic transferred from the roads probably is the receipts from merchandise and livestock. These showed an improvement of £1,386,000 on 1956 and of £1,012,000 on the already high receipts of the previous period. Mineral traffic produced £305,000 more than in the corresponding period of 1956 and coal and coke traffic receipts were £701,000 more than in that period. There is still room for more of this traffic to be transferred from the roads and this figure may be expected to rise still higher. Parcels receipts showed a substantial increase over the 1956 figure, and collection and delivery services, now included in the total of British Railways freight receipts, produced the same results as in the previous period.

Despite the effect of fuel rationing on British Road Services, the combined receipts for road haulage (the biggest element), inland waterways freight, and ships were only £206,000 less than in the same period of 1956 and were better than in the previous period. Although the figure is not broken down, increased canal traffic may have helped in this. In total, the Commission took £5,699,000 more than in the previous year and £1,822,000 more than in the previous period.

The Commission estimates that as regards railway pas-

senger receipts, some 20 per cent of the increase of 22 per cent is the result of additional traffic attracted because of fuel rationing. Of the increase of 13 per cent in London Transport receipts, roughly half is attributable to the same cause. The proportion of the increase in railway freight receipts attributable to diversion of traffic from road is more difficult to assess. The actual increase of 17 per cent in railway merchandise receipts is estimated to include 6 per cent from the yield of increased charges which were not in operation a year ago. However, during last year there was a pronounced downward trend in this class of traffic, which has now been reversed. Some 2 per cent of the 7 per cent increase in coal and coke receipts is attributed to diversion of traffic to rail.

PERCENTAGE VARIATION 1957 COMPARED WITH 1956

	Four weeks to January 27
British Railways—	
Passengers	+22.2
Parcels	+10.9
Merchandise & livestock	+17.3
Minerals	+ 7.4
Coal & coke	+ 7.0
C. & D. services	+ 7.0
Total	+13.2
Ships (passengers)	— 0.8
British Road Services, Inland Waterways and Ships (cargo) ..	— 4.9
Road Passenger Transport, Provincial & Scottish	+19.2
London Transport—	
Railways	+11.7
Road services	+14.0
Total	+13.3
Aggregate	+12.0

Calcutta Suburban Traffic Centre

TWO main passenger termini serve Calcutta with its reputed population of about 3,000,000: Howrah and Sealdah. The former is the passenger terminus of the former East Indian (now Eastern) and Bengal Nagpur (now South Eastern) Railways: Sealdah is that of the broad-gauge lines of the former Eastern Bengal Railway, that portion which passed to India after Partition in 1947 being now part (the Sealdah Division) of the Eastern Railway. Whereas the better-known Howrah is across the River Hooghly from the city, Sealdah is in its heart. Virtually all the long-distance traffic from and to Madras and Southern India, Bombay and Western India, and Delhi and the many other large cities of Northern India is concentrated at Howrah. As, however, that station has relatively little suburban traffic, only about 70,000 passengers use it daily.

Sealdah, on the other hand, deals with a great volume of local traffic from the northern and southern suburbs besides a little long-distance traffic, the total volume amounting to nearly 250,000 passengers daily conveyed in 248 trains—all that Sealdah can at present handle. It is, therefore, one of the busiest steam-worked termini in the world, and is crying out for the electrification promised in the near future. Certain of its main-line trains run to and from destinations on the former E.I.R. in Bihar and Upper India, crossing the Hooghly north of Calcutta by the Naihati Bridge. The same bridge is traversed by the "Upper India" and "North Bengal" expresses, between Sealdah and Sakrigali Ghat, where connection is made, by steamer over the Ganges and by the metre-gauge Assam Link line of the North Eastern Railway and the Amingaon/Pandu ferry, with Assam, so avoiding transit through Pakistan. Others run over the old E.B.R. main line to and from destinations in Pakistan (North and East Bengal). The remaining 224 trains, 112 each way, are locals, run as intensive—sometimes 5-min.—services in the rush hours. All are steam worked.

When the old Eastern Bengal Railway was constructed to connect Calcutta with northern and eastern Bengal a site was chosen for its Calcutta terminus near what are now

the junctions of three of the city's main thoroughfares. The original station was designed by Mr. Walter Glanville and was built in 1869. As Calcutta subsequently spread, large areas south of the city became suburbanised, and it was found necessary to provide them with railway communications which were naturally focused upon Sealdah. These lines, radiating to Diamond Harbour—a one-time mail port down the Hooghly—Lakshmikantapur, Canning, and Budge Budge, are known as the Southern Section. As, however, Sealdah station faced north-east, it was not convenient to bring this section into the original station, and instead a separate station, known as Sealdah South, was built close to but at right angles to the original or Main Station.

For similar reasons, the latter before long became inadequate for the growing local traffic from and to the northern outer suburban areas. Consequently, a new North Sealdah

Station was built alongside the Main Station, the relative sites and functions of these two stations being similar to those of the main line and suburban stations at Kings Cross. There have, therefore, been three stations at Sealdah for the past half-century.

Sealdah lost much of its importance at the time of Partition, however, as its main lines served Siliguri for Darjiling, Goalundo for Dacca and Eastern Bengal, and Assam by two routes. Perhaps that is just as well, because the suburban traffic has grown so rapidly that saturation point has been reached with steam operation and existing facilities. The old Eastern Bengal direct main line now passes out of Indian territory and into Eastern Pakistan only some 70 miles north of Sealdah, and so most of the main-line trains using this terminus have to cross the Hooghly. A description of this important traffic centre will be found on another page.

LETTERS TO THE EDITOR

(The Editor is not responsible for opinions of correspondents)

Site for a Transport Museum

February 8

SIR,—Your observations in your February 1 issue on the need for an alternative museum to relieve the congestion at York are most timely, and it is deplorable that the British Transport Commission should have lost the opportunity to turn the historic Brighton Railway Works into a home for these most valuable relics. I understand that the danger of rolling stock scheduled for preservation deteriorating beyond hope of restoration because no adequate coverage is available for it, is both real and pressing. If, in fact, these locomotives and carriages are lost to posterity through lack of proper accommodation being made available for them, the Commission will have deserved ill of the nation, and will have betrayed the trust placed in it in this respect, which, to do it justice, it has up to now appeared to be fully conscious of.

Something must really be done, or the lamentable story of Swindon and the *Lord of the Isles* will be repeated. It would be a sad folly if, for the sake of some pettifogging economy or misplaced local pressure, a great opportunity were lost, and it could only result in the British Transport Commission incurring the lasting ill-will of thousands of railway amateurs all over the world.

Yours faithfully,

HENRY MAXWELL

106, Ashley Gardens, S.W.1

February 10

SIR,—In your issue of February 1, you stress the urgent need for a transport museum in the South of England to supplement and widen the scope of the York Railway Museum. You also point to the suitability of Brighton Works for this purpose. In your February 8 issue Mr. Hamilton Ellis mentions disquieting news from Brighton of a possible alternative use for the premises.

In 1951, the British Transport Commission accepted the admirable report, "The Preservation of Relics and Records." The recommendations have been implemented to an important extent; an organisation has been set up in competent hands and much good work put in since its formation. An enlightened attitude seems to have been taken as to selection and preservation of rolling stock and smaller items, from the railway and road sections of the Commission's undertaking. Yet the fruits of this attitude and the efforts of the Curator cannot be seen owing to the lack of a museum. The B.T.C. is one of the principal property-owners in the country, and with changing times some of its older buildings are becoming redundant. Is it too much to ask that the Commission seize the opportunity presented by the closing of Brighton Works? Here is a site accessible to London, in the centre of a major town, convenient for public access from the

central railway station, with admirable heated buildings requiring little adaptation and with rail access—but on so narrow and elevated a site as not to lend themselves to development for railway workshop or traffic purposes.

Yours faithfully,

HAROLD D. BOWTELL

29, Langdale Road, Victoria Park, Manchester, 14

Aluminium Coach Doors

February 8

SIR,—We are glad to see that under Notes and News in your issue of February 1, on page 146, a reference is made to the original conception and development of the aluminium coach doors for British Railways which are the subject of an article in your issue of January 18, on page 70.

We applaud the efforts made by W. Deans & Son (Yorkshire) Ltd. in producing these doors as die castings. In the interest of other foundries and our own activities in this field, however, it should be recorded that this development was initiated some years ago through the Castings Committee of this Association.

With the assistance of the committee, on which the principal aluminium foundries are represented, a design evolved by the Association staff was approved by British Railways, and afterwards developed and manufactured by Lightalloys Limited on a considerable scale.

In view of the world-wide circulation of *The Railway Gazette*, we feel that you would wish to have this information.

Yours faithfully,

F. L. STAFFORD
Chief Engineer

The Aluminium Development Association,
33, Grosvenor Street, W.1

Rough Riding in Passenger Stock

February 7

SIR,—Your correspondent, Mr. T. E. Green, in your issue of January 25, raises the question of rough riding on main-line journeys.

I have often pondered the origin of the term "rolling stock." The answer has now been found. I travel regularly by the Metropolitan Line of London Transport, on the straight stretch from Finchley Road to Harrow-on-the-Hill. If the passenger happens to travel at the ends of the carriages and in the old stock now in use on the Uxbridge Line, he can be sure of a really rough ride.

Yours faithfully,

R. D. TURNER

25, Pamela Gardens, Eastcote, Middlesex

THE SCRAP HEAP

Smuggling by Locomotive

The locomotive of a train from Lille to Brussels was confiscated at the Franco-Belgian frontier station when Customs officers found scent, alcohol, and bottles of champagne worth more than £50 hidden under the coal.

Good Service

In my business I need a delivery service which runs 365 days a year, in fog, snow, or holiday, and will continue to call whether hauling a small box or a full payload; in short, a railway service. In three years my rail damage consists of two sixpenny fruit pies!—*From a letter to the "News Chronicle."*

English Electric Locomotives in Japan

Completion on November 19, 1956, of electrification of the Japanese National Railways Tokkaido main line between Tokyo and Osaka, to which editorial reference was made in our December 21 issue, was the occasion for taking out of main-line service, with appropriate ceremony, a British-built electric locomotive after 33 years' reliable and efficient operation. Mr. Gentaro Nishio, of the Japanese National Railways, states that this was one of the "EF50" class, dating from the inauguration of part of the Tokkaido line in 1923.

The locomotive, built at the Dick Kerr Works, Preston, of the English Electric Co. Ltd., is shown in the accompanying illustration. Mr. Takatsukasa, who is son-in-law of the Emperor and a well-known railway enthusiast who works in the Transport Museum, is seen placing a wreath on the engine—like himself, aged 33—on behalf of the Japanese Railfans' Club.

This class of locomotive for some years hauled the principal fast passenger trains on the Tokkaido line, and, the day before completion of electrification to Osaka, hauled the last express between Ueno and Tokyo.

The Unfamiliar Train

In a January issue of the *News Digest* of the Transportation Association of America there is a reference to a survey carried out by the University of Michigan. Presumably this is based on a sample but the results are not without interest. The survey revealed that 75 per cent of American adults had never travelled by air, 30 per cent had never travelled by rail, and 11 per cent had never ridden in a motorcar. Results of the survey also showed that about 66 per cent of all trips taken were for pleasure purposes. It is for speculation what a similar survey in Great Britain would reveal.

Railways in the Smaller States

News that the landlocked sovereign republic of San Marino is considering acquisition of a merchant fleet is a reminder that there are no longer any railways in that independent State of some 14,000 inhabitants, for the electric railway connecting the capital, San Marino, with the Italian State Railways at Rimini, was destroyed during the last war. There are, not surprisingly, no railways in Andorra (population 6,000) high in the Pyrenees. The largest, or at least most economically developed, sovereign State to possess no public railway is Iceland; the story that railway troops of the Royal Engineers were sent there during the war, in the belief that railways existed, is apocryphal.

The small principalities of Liechtenstein and Monaco are traversed by main lines respectively of the Austrian Federal and French National Railways. The grand duchy of Luxembourg, with an area of 1,000 square miles and a population of over 300,000, and highly industrialised, is served by the 314 miles of the Luxembourg National Railways, on which diesel and electric traction, the latter at both 3,000 V. d.c. and at 25,000 V. a.c., 50 cycles, play an important part.

The Vatican City has its own railway, the few yards of track at the extremity of a short double-track line, completed in 1932, of the Italian State Railways. There is an imposing passenger terminus, though the line has never, or almost never, carried passengers. An illustrated article on this unique railway appeared in our issue of September 15, 1950.

Happy Dispatch

For all their efficiency and punctuality, which could be held up as an example to many older railways in Europe, the Japanese railways have their own characteristic flavour. . . .

The stationmaster, as the train draws out of the station, stands to attention facing it, then turns in the direction in which it is disappearing till it is out of sight, to ensure that the tail lights are in order and that it has gone safely on its journey. This is known as *mokuso* or "gazing after."—*From "The Times."*

Smoke Signals

(See our issue of February 1)

All sorts of little things are sent to try us
And some of them, alas, seem hardly
fair;
One spot of trouble, waiting round the
corner,
Is this new business of clean air.
It seems designed to incommode the
railways;
To dodge it will require consummate
tact,
Especially when it stipulates that locos
Are "buildings" in the meaning of the
Act.
Now engine crews must curb their
ancient instincts
And learn to look ahead and count the
cost
Before they punctuate their lonely vigils
By ill-timed use of shovel or "exhaust."
For stoking-up when stopping at a
station,
Or blowing off ad lib. along the line,
Or smoke-screens over Mrs. Moggs's
washing,
May end up with the sack and/or a fine.
I, too, may likewise find myself affected,
My scanty pleasure much reduced in
scope,
For, when I'm watching trains down
at the station,
I'll have to leave off smoking that old
rope.

A. B.



Photo]

[G. Nishio

Placing the wreath on the Japanese National Railways "EF50" class locomotive on its withdrawal from main-line service

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

SOUTH AFRICA

Additional Tank Wagons

Work has started in the S.A.R. & H. workshops at Pietermaritzburg on 300 petrol tank wagons and 100 water wagons, at a total estimated cost of £985,000. The petrol tank wagons, which are to be completed at the rate of 20 a month, will accelerate the transportation of petrol and paraffin, while the water wagons are intended for use with the new Beyer-Garratt locomotives on order from the United Kingdom, some of which have already arrived in South Africa.

An average of more than 30 million gal. of petrol and paraffin is conveyed monthly by the S.A.R. & H. from the ports to inland centres. The petrol tank fleet in service as at July 31, 1956, consisted of 1,023 wagons, which in a year's time will increase to 1,323, and will have cost the administration £2,579,694.

RHODESIA

South East Railway

Nearly 15,000 passengers, with Africans in the majority, have availed themselves of the passenger service on the new line between Bulawayo and Lourenço Marques during the first five months of opening. This figure does not take into account passengers conveyed locally between stations in Portuguese East Africa, but includes all through bookings in both directions as well as local bookings in Rhodesia.

Goods traffics (imports and exports) have progressively increased from 50,517 tons (imports) and 63,212 tons (exports) for the quarter ended October 31, 1955, to 120,783 tons (imports) and 99,337 tons (exports) for the quarter ended October 31, 1956. Import traffic is of a general nature and includes petrol, oil, motorcars, timber, fertiliser, wheat, cotton, piece goods, steel, whilst export traffic consists almost entirely of copper, chrome and asbestos.

When the 12 new diesel electric locomotives now on order arrive in 1958 it is proposed to allocate eight for haulage of trains along the Rhodesian section of the South East Railway as far as the border at Malvernia.

INDIA

Railway Finance Conference

The financial advisers and Chief Accounts Officers of the Indian Railways met in New Delhi recently under the chairmanship of Mr. J. Dayal, Financial Commissioner for Railways, to consider problems in the field of finance and accounts connected with the effective implementation of the second Five-Year Plan. Among the subjects discussed were measures for achieving stricter control over expenditure, correlating performance and expenditure, and

simplification of accounting procedure. The conference discussed setting up efficiency cells on each railway with the object of exercising a continuous control on expenditure and ensuring the most economic use of available resources.

Training School Inaugurated

Dr. Rajendra Prasad, President of the Republic of India, recently inaugurated a new training school at Udaipur, Western Railway. The school has facilities for training 650 students at a time.

NEW ZEALAND

Last New Steam Locomotive

The last steam locomotive to be built for the N.Z.G.R. was placed recently in service. It is the last of an order for 35 "Ja" class 4-8-2 locomotives constructed at the Hillside Railway Workshops, Dunedin.

CANADA

Manning of Diesel Locomotives

The Royal Commission established to inquire into the issue over the manning of diesel locomotives on the Canadian Pacific Railway has announced that its hearings will begin in Ottawa on March 4.

Mr. N. R. Crump, President of the C.P.R., has stated that while the decision of the Royal Commission would not be binding, he accepted the assessment of Mr. St. Laurent, the Prime Minister, and his colleagues, that finality of the dispute would be achieved. He added that his company would present all the facts to the Commission, and would abide by its decision.

The Chairman of the Commission is Mr. Justice Kellock, of the Supreme Court.

ARGENTINA

Visit of German Railway Officers

A party of German railway experts will shortly visit Argentina to offer advice on the construction and installation of repair and maintenance shops and the training of personnel.

Pan-American Railway Congress

The Argentine Government has published the names of the committee which will organise the ninth Pan-American Railway Congress to be held in Buenos Aires from August 30, 1957, which date marks the centenary of the Argentine railways.

Tank Wagon Train Accident

An extremely serious accident took place recently near Mojotoro Station, on the General Belgrano Railway, causing two deaths and material damage to the amount of 30 million pesos. A

train of 40 tank wagons, hauled by a new 1,500-h.p. General Motors diesel-electric locomotive, left the Chachapoyas petroleum refinery for Güemes, and for some reason not yet established, the driver lost control of the train, which began to run down an incline at an ever increasing speed, until when approaching Mojotoro Station it left the rails, followed by all the tank wagons, the contents of which caught fire and exploded, leaving nothing of the train but a mass of twisted metal. Several houses near to the track also caught fire and were gutted.

UNITED STATES

Improved Sanding Gear

Research conducted for the Southern Pacific Railway by the Stanford Research Institute in California is reported to have resulted in development of a more efficient type of nozzle for sanding gear. It was found that a specially shaped nozzle, with a shield to protect the falling sand from the wind, gave a wider spread, with consequent improved adhesion. Tests are reported to have shown that sand consumption has been reduced to $\frac{1}{2}$ lb. per min. per wheel, against previous rates of 3-5 lb.

IRELAND

Report on Transport

Mr. William Norton, Minister for Industry & Commerce, has announced that the report of the recent inquiry into transport is being written at the moment, and that "it should not be long until we get it." He added that the Government of the Republic would have to await this report before coming to any conclusion regarding the decision of the Northern Government to close three G.N.R. lines, those from Newtownbutler to Omagh, Portadown to Tynan, and Bundoran Junction to Belleek.

Subsidy for S.L.N.C.R. Renewed

The Government subsidy is to be provided again this year to enable the Sligo, Leitrim & Northern Counties Railway to remain in operation for a further period pending the outcome of the proposals of the Northern Ireland Government to close certain G.N.R. lines including the line through Enniskillen, where connection is made with the S.L.N.C.R. The latter has been operated at a loss for many years and was in receipt of subsidy from both Governments.

The Government of Northern Ireland discontinued payment of the subsidy after 1955, but the Government of the Republic provided £15,000 in the year ended December 31, 1956. A subsidy up to a similar maximum is being provided for 1957.

The railway is a private concern with

headquarters at Enniskillen. It connects with C.I.E. a few miles south of Sligo, crossing the Border en route. Its principal traffic is livestock from the western and north-western counties for export through Belfast and Londonderry to Great Britain.

SPAIN

Zamora-Coruña Line

The Minister of Public Works has announced that the line in Galicia from Zamora to Carballido via Orense is ready to be officially opened. The construction of this line has taken five years. It is also announced that the line should be completed for through running to Coruña in two years' time.

SWITZERLAND

Federal Railways in 1956

The provisional figures for 1956 show that the Federal Railways carried 215,700,000 passengers in that year, an increase of 7,300,000 in 1955, earning fr. 326,000,000 compared with fr. 315,100,000 in the previous year. Goods traffic increased by 1,290,000

tonnes to 24,760,000 tonnes with receipts of fr. 484,100,000, an improvement of fr. 26,900,000. Working expenses also rose, from fr. 569,400,000 to fr. 645,900,000, so that the surplus of fr. 270,000,000 of 1955 was reduced to fr. 231,800,000. The final results are expected to be published in March.

FRANCE

Dual-gauge Line Chedde-St. Gervais

St. Gervais-le-Fayet is the junction of the standard-gauge branch of the South Eastern Region from Aix-les-Bains and of the metre-gauge line eastwards to Chamonix and Vallorcine. In 1910, the Société Alais-Froyes-Camarque, with the agreement of the then P.L.M. Company, constructed a two-mile link from its factory to the metre-gauge line to give it a connection with the P.L.M. station at Chedde. Standard-gauge wagons are used by this firm and, until recently, these were conveyed between St. Gervais and Chedde on metre-gauge transporter wagons owned by the firm but accepted for transit by the S.N.C.F. (as successor to the P.L.M.).

The number of wagons which could be moved in this way was severely

limited, and though many expedients were tried it has, in recent years, been very difficult to handle the traffic originating at the Chedde factory. During the second half of 1956 the S.N.C.F. laid a standard-gauge track between St. Gervais and Chedde in addition to the existing metre-gauge line, giving through running from the factory to the S.N.C.F. standard-gauge line at St. Gervais.

The existing track bed was used for this, the four rails and the conductor rail for the metre-gauge line all being secured to timber sleepers. Amongst other ancillary work, alterations had to be made to three bridges.

WESTERN GERMANY

Transport of Accompanied Motorcars

The experimental service of special vans for transport of accompanied motorcars between Hamburg and the Swiss-Italian frontier station of Chiasso, described in our issue of August 10, 1956, proved so popular last summer that it was reintroduced for the Christmas holiday period, and since February 1 has been provided daily between Hamburg and Basle.

Publications Received

Loco Driver. By Eric Leyland. Men of Action Series, No. 2. London: Edmund Ward (Publishers) Ltd., 194/200, Bishopsgate, E.C.2. 7½ in x 5 in. 95 pp. Illustrated. Price 8s. 6d.—This book, which is suitable for the younger generation, gives an insight into the working of the steam locomotive, the duties of an express locomotive driver and fireman, and the functioning of various parts of the locomotive, illustrated by diagrams. A trip on a Pacific locomotive from Euston to Carlisle is described in simple language, also the working of controls, firing, and so on. Other subjects include signals procedure, and there is a description of lamp codes for various trains, also illustrated.

On Engines in Britain and France. By P. Ransome-Wallis. Hampton Court, Surrey: Ian Allan Limited, Craven House. 8½ in. x 5½ in. 244 pp. Illustrated. Price 25s.—The author, well known as a photographer of railway locomotives, relates some experiences on the footplate in this country and France. He also compares the performances of similar types of locomotives and trains in each Region of British Railways, and comments on the different types of driving and firing in evidence, not only as between each Region but in some cases between crews of the same shed. He seems to have been unfortunate in many cases to have had late finishes to his runs; there are several instances when the reader would like to know more than just the bald statements as to unpunctuality or poor locomotive performance which the

author occasionally makes, and is left with the suspicion that, perhaps the causes for this or that particular delay might have been determined with a little investigation. In view of the author's attainments in photography, it is surprising that more illustrations taken perhaps from the footplate, do not appear. Some of the journeys recorded in France are no longer possible on steam engines; and in this country, as large-scale conversion to diesel or electric traction takes place, a similar situation will arise before long, which adds to the value of this book as a record.

L.M.R. Freight Train Timetable for Traders.—To help traders, the London Midland Region has issued a timetable which gives details of the departures and arrivals of the principal express freight trains from main centres of industry. Also included in this handy little publication are details of the district commercial officers and goods agents in the Region, and their telephone numbers, and a detailed map of the L.M.R.

Journal of the Engineers' Guild. The January issue of the *Journal of the Engineers' Guild* has been entirely remodelled. Previously the *Journal* appeared once every two months: it now becomes a quarterly, with a larger page size and increased contents. The policy is to present material reflecting the human factor in professional engineering: problems of personnel management, status, conditions of work, and so on. An article, "Social Aspects of the Volta River Project" (in the Gold Coast), illustrates this approach.

The item "Of Current Interest" deals with matters of a topical character and professional interest. Besides full information on activities of the Guild, and news of members, there are reviews of books and publications—not narrowly restricted to those of strictly engineering interest—and particulars of appointments vacant. The *Journal* is published by the Engineers' Guild, 78, Buckingham Gate, S.W.1. Price 2s. 6d. a copy.

Hellefors Magnetic Iron.—Characteristics and properties of Hellefors Remko magnetic iron, manufactured by Hellefors Bruks Aktiebolag, Hellefors, Sweden, are given in an illustrated booklet which is available from Ernest B. Westman Limited, 39, Lombard Street, London, E.C.3, through which firm further particulars can be obtained. The material is stated to be specially suitable for frames, yokes, armatures, and so on, and for all components in which it is desirable to produce high flux density with d.c. magnetisation, followed by demagnetisation as nearly complete as possible when the field is removed.

Cruising on the Llangollen Canal.—This illustrated 32-page booklet is the first of a series dealing with cruising on British Transport Waterways. There is a short history of the Llangollen Canal, followed by a section, illustrated by diagrammatic maps on each page, describing places of interest along the route of the canal. Other sections give the scales of charges for the use of pleasure craft and instructions for those who use the canal for pleasure. The booklet is obtainable from the British Transport Commission. Price 1s.

Calcutta Passenger Traffic Problem

Measures to relieve congestion at Calcutta Sealdah, which handles nearly 250,000 passengers a day

SEALDAH, the busiest passenger traffic centre in India, handles more than three times as many passengers as the better-known Howrah terminus across the River Hooghly from the city. This is because it serves densely-populated suburban areas north and south of Calcutta proper and is situated in its heart. Nearly 250,000 passengers use Sealdah daily arriving or departing in 248 trains. Of these, 224 are locals and the other 24 long-distance or main-line trains, 12 in and 12 out in the 24 hr. Their distribution and a historical outline of the station are contained in an editorial article on another page, which also explains why there are three Sealdah stations, Main, North and South, virtually contiguous; their relative positions are shown in the diagram.

Though it deals primarily with the long-distance trains, the Main Station also accommodates some of the northern suburban traffic, the bulk of which enters and leaves the North Station; Main and North together handle 62 locals each way daily. Sealdah South caters for 50 local trains each way to and from the southern suburbs. There are the usual peak hours after 8.30 a.m. and 4.30 p.m., when the train-interval may be as small as 5 min. About 75 per cent of the total daily passengers entrain or detrain during these rush periods.

Rush-hour Operating Difficulties

The working of the rush-hour traffic into and out of Main and North Stations is greatly complicated by the yard layout, in which there are only two running lines across Circular Canal Bridge, as may be seen from the diagram; the third road over that bridge connects the grids on each side of the canal and is isolated from the passenger running lines. These two running lines have to carry not only all incoming and outgoing trains, but also large numbers of light-engine and empty-stock movements to and from the locomotive yard and carriage sidings. There are, therefore, many cross movements in this bottle-neck.

The yards serving Main and North Stations contain about 31 miles of track and are controlled by two signal cabins, "A" with 75 and "B" with 54 levers. It is the men in "B" cabin who have the responsibility for the bottle-neck and its complicated train and engine movements, the entrance to the locomotive yard being just beyond it; the shed houses 133 engines. During the rush hours, the synchronisation of the various cross movements between up and down trains and engines to and from shed, essential to smooth working, calls for clear heads and rapid decisions in "B" cabin.

A third cabin with 62 levers controls

the 50 trains each way using the South Station daily. It is estimated that in the three cabins together some 23,000 lever movements are made in any 24 hr. There is full interlocking at each cabin.

Station Structures

Each of the three stations has four platform roads and the platforms in the Main Station are 914-928 ft. long and 28 ft. wide; some 550 ft. are covered. In 1942 the circulating area was extended by 90 ft. and the imposing new façade, seen in one of the illustrations, was also added then.

The foundations of the Main Station had to be abnormally deep—in many places 45 ft. below natural ground level—owing to the presence of many underground water tanks or pits at

the site. Some of the walls at that depth are 8-10 ft. thick. To bring the main line into Sealdah Main Station, a six-mile approach embankment was necessary to cross various roads and canals. Circular Canal Bridge, referred to above, consists of three 100-ft. girder spans.

Booking Facilities and Staff

In the three stations together there are 40 ticket-issuing windows, including eight for season-tickets—open for only three days at the end of each month—and others for ladies and for railway employees. Some of these windows issue tickets for as many as 240 stations. Eight self-printing machines are in use for the semi-automatic issue of tickets to stations, for which booking is



Main-line railways in Calcutta and environs, showing position of Sealdah in relation to bridges over Hooghly



Approach to Sealdah North Station during the morning rush-hour

heaviest, with the minimum of delay; they are responsible for considerable reduction in the lengths of queues. The sum paid for tickets daily is about £3,000, and the average number of bookings is some 19,000. But 11,000 season tickets are issued each month at Sealdah for suburban stations. These bookings represent only a minority of the traffic through the three Sealdah stations; the great majority of their passengers purchase nearly 90,000 season tickets at suburban stations for journeys to and from Sealdah. The terminus employs 114 booking clerks working in shifts, and 125 ticket collectors at its three stations.

Parcels traffic at Sealdah is also heavy, averaging 4,000-5,000 inwards and outwards, apart from fish which is dealt with separately. Daily earnings from luggage and parcels averages about £750. Moreover, some 3,000 mail bags pass through the station both ways on an average day.



Facade of Sealdah Main Station



Main Station, showing (left to right) carriage sidings, main and suburban running lines, and railway general office building

Passenger amenities include well-furnished waiting rooms with attendants, three retiring rooms, a refreshment room, and numerous vendors of various wares. Four guides are provided to assist ladies, and four to help unsophisticated men in the booking of their luggage and tickets, and to give general information. The total staff under the Station Superintendent numbers over 1,500 men and women.

An acute difficulty—peculiar to Sealdah—in the working of the station since Partition has been the problem of sheltering large numbers of displaced persons from Pakistan. These unfortunates take temporary refuge inside the station buildings, which are quite inadequate for the thousands that at times have invaded this terminus. Various organisations set up camps and provide assistance for these refugees, but the railway has to provide large extra staffs for the additional sanitation

and water supplies required. The superintendent's greatest anxiety has been to ensure that as little inconvenience as possible is caused by them to the heavy volume of normal passenger traffic. Though not so numerous as between 1949-1952, there are still from 300 to 350 displaced persons to be dealt with each day. This is made more difficult by the concentration in the station of 220 camp-deserters who, for want of accommodation elsewhere, continue to live inside the station with the new migrants.

Adjacent to the passenger stations is Sealdah Goods Station. It is capable of accommodating 12 incoming and outgoing trains a day and is under a separate Goods and Yard Supervisor.

Remodelling

In addition to the electrification of all lines into Sealdah already approved, provision for a new combined station

(Continued on page 188)

German Federal Railway Refrigerator Cars

All-welded vehicles of standardised design



Refrigerator car for the German Federal Railway, built by Jos. Rathgeber A.G., Munich

THE German Federal Railway has placed in service some 500 refrigerator cars of all-welded design to replace older refrigerator cars with timber bodies. The all-welded cars were designed and manufactured by Jos. Rathgeber A.G., Munich, 54, and are fitted with roller bearings and other equipment to meet the R.I.C. and U.I.C. regulations for European rolling stock.

Standardisation of Design

Much has been done to standardise the design with the object of keeping maintenance costs as low as possible, also manufacturing costs. Welding is used extensively; the body framing is welded to the underframe, and the outside panels and flooring are welded to body and underframe respectively. Special care has been taken to ensure that all welded joints are tight, and anti-corrosive treatment is applied to ensure a long service life, and good insulation.

Eloxadised light metal has been employed, except for the floor. The car interior consists of vertical corrugated sheets. No inside frame is employed, and to allow free circulation of air between the walls, the corrugated sheeting is attached to the outside framing at the floor, the upper corners of the body, and the door frame only, with the object of reducing as far as practicable the heat conducting points.

The floor has been strengthened to permit loading by fork-lift trucks without any risk of damage. Floors are of hollow plate, and of the firm's patent design. They are screwed together at the joints and fastened to the floor frame by means of screws, the grooves being filled with bitumen; for further protection floors are hot galvanised. It is stated that the particular design of flooring used in the construction is very little heavier than that of timber.

In this particular design two circular

loading hatches, one at each end of the car, are provided, for supplying either dry or water ice. In addition there are two ducts in the roof of the car. The double door and hatch frames, also the doors and hatches themselves, are provided with endless vulcanised rubber; a suitable locking device ensures tightness. Particular attention was given to the insulation medium used to retain stability over a range of temperatures between + 70° C. and -50° C.

Each ice bin holds 1,250 kg. of water ice, and the two roof ducts have a capacity of 425 kg. of dry ice each; there is only one hatch for each pair of bins. Several types of insulating materials are used, including Onazote, Isoflex, and Iporka, with or without layers of alu-

minium foil. To maintain an even cooling temperature while the car is static and in transit ventilators are fitted on the roof, when the car is in transit ventilators are driven by Flettner motors, and at halts by electric motors.

Perforated Grates

The car floor is covered by strong perforated grates of hot annealed aluminium-silicon alloy which permits cooling air to circulate beneath the load; they are also easy to clean. Adequate provision is made for draining by the provision of drain pipes underneath the ice bins. Besides the type in service on the German Federal Railway, the firm also manufacture cars with a self-contained refrigerator equipment, which can be either a diesel-electric or electrical unit; the electrical unit can be coupled to a mains supply.

Calcutta Passenger Traffic Problem

(Concluded from page 187)

is included in the Second Five-Year Plan. The proposal is to replace the three existing stations by a single one with 16 platforms, six for main-line and Bongaon branch suburban trains, six—each to accommodate 14-coach trains—for through main-line trains, and four for Southern Section traffic. The yard will be remodelled to eliminate the two-road bottle-neck and provide other operating facilities. Power-signalling is also envisaged. The goods yard will also be improved and additional goods sheds provided. The estimated cost of these improvements is £1,625,000, the figure included by the Eastern Railway in the five-year programme.



Car interior looking toward the ice container, showing the perforated floor plates which allow circulation of air

Re-lining Dove Holes Tunnel

*Cutting out and renewal of brick
archwork: mechanical re-pointing*



Cutting out brickwork near haunches of arch, using jiggers, showing rail centres erected for support of new brickwork

DOVE HOLES TUNNEL is situated on the London Midland Region Midland Division main line from Derby to Manchester and between Peak Forest and Chapel-en-le-Frith Stations, and is heavily used, approximately 140 trains passing through it daily.

The ground through which the tunnel is driven is composed of heavy rock formation, mainly of limestone and shale, in which exist several large faults developing into "swallow" holes from which water pours continuously, finding its way into the tunnel through open fissures in rock strata of the side walls. It is not, however, considered to be a

wet tunnel; but there are several wet areas where the water from the River Dove disappears into the fissures in the rock formation and collects behind the brick lining, causing seepage through the joints.

The tunnel was constructed about 80 years ago, and is 1 mile 1,224 yd. long, with a track gradient of 1 in 90 sloping downwards towards the north end. It is a double-line tunnel with appreciable variations of cross-section over its length, the archwork being stepped in several places. The side walls are mainly vertical and stone faced, whilst the archwork above is brick lined

throughout. There are eight existing ventilating shafts varying in diameter from 8 ft. to 10 ft. and in depth from 52 ft. to 336 ft.

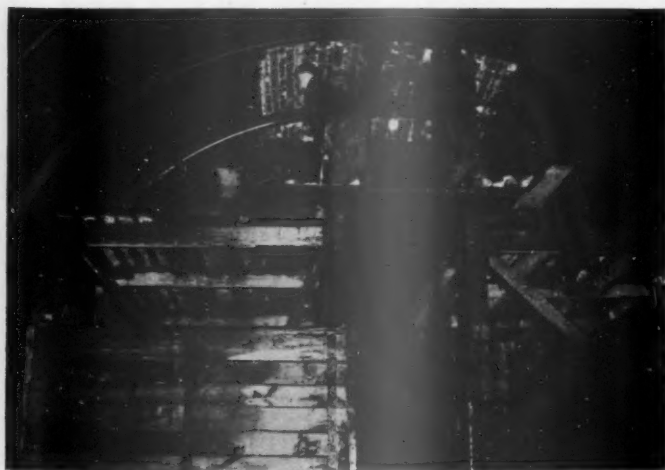
The rate of deterioration of the brick lining and mortar joints had been increasing rapidly for several years until it became clear that patch repairs could not keep pace with the extent of maintenance work required. Early in 1954 it was decided that the safety of line necessitated the undertaking of major repairs. A special detailed examination revealed that only about 10 per cent of the tunnel lining was sound, whilst the other 90 per cent of the brick archwork required early attention. In addition to this, repairs to the lining of the air shafts required early attention.

A scheme was prepared and special traffic facilities were arranged to enable the work to be carried out with complete possession of the lines for five nights weekly from 10.30 p.m. to 7 a.m., Monday to Friday inclusive, throughout the scheduled period. The actual work in the tunnel was started in June, 1954.

Because of the extent of the work, excessive preparatory work had to be carried out, necessitating the establishment of a temporary camp near the site to accommodate the 60-80 workmen to be employed in the tunnel gangs. This involved the erection of hutments for sleeping quarters, canteen, ablution block, and so on, with temporary sidings for the tunnel train, all of which was contained in the sidings yard at Chapel-en-le-Frith Central Station.

Use of Steel Ribs

The cutting out and renewal of the tunnel lining involved the inner two rings of the brick archwork to a depth of about 9 in. over some 70 per cent



Cutting out brickwork at crown of arch, using pneumatic jiggers from stage wagons



Re-pointing the stone side wall joints, using the Aerocem mechanical process

of the length of the tunnel. For this purpose steel ribs (formed of old rails bent to the particular profiles of the tunnel) had to be erected for the fixing of the timber claddings supporting the old and new brickwork. About 450 of these ribs of varying profiles were used, most of which were dismantled and erected progressively to give continuity to the work. Altogether about 1,400,000 new bricks were used.

For the remaining 20 per cent of defective lining the bricks themselves were in reasonably sound condition, but the mortar joints had deteriorated extensively. Similarly the joints in stone facings of the side walls had suffered serious deterioration to a considerable depth.

Aerocem Process

It was found practicable, however, to apply mechanical re-pointing to the joints successfully and the Aerocem pro-

cess was used. The face and joints of the brick and stonework were prepared by washing down and cleansing, using water jets directed on to the work with special pressurised lances in advance of the application of the Aerocem process of re-pointing.

About 5,600 sq. yd. of the existing brick archwork and 5,200 sq. yd. of the existing stonework in the side walls were treated to an average depth of 2 in.

Electric Power Supply

Pneumatic tools were used for cutting out the old brickwork; and the power used in the tunnel was taken from an air line laid between the two rail tracks down the centre of the tunnel with take-off points at 50-ft. intervals. The supply to the air line was fed down one of the ventilating shafts from an electrically driven (automatic) compressor housed in a shed erected on the open ground over the top of the tunnel near the

ventilating shaft; electricity was supplied by the local authority.

The lighting used for the work in the tunnel was ordinary Tilley lamps, these being found to be efficient and adaptable in application, adequately satisfying all the various requirements.

Working Tunnel Train

The working tunnel train consisted of about 20 wagons which included staging wagons, material and plant wagons, lavatory van, messing van and so on, and was worked in and out of the tunnel with a diesel locomotive.

The original estimated time for carrying out of this work was three years, but the work in the tunnel was completed in about 2½ years, on November 30, 1956.

The work was carried out under the direction of Mr. J. Taylor Thompson, Chief Civil Engineer, London Midland Region.

Improved Rail Pile

Three unserviceable rails welded bottom to bottom

THE present short and costly supply of new steel is proving an increasing incentive to use second-hand steel of good quality for many purposes whenever possible. Track-worn rails are available in comparatively large quantities, but more often than not are used where steel of such good quality is not essential. However, their high-strength can be made use of effectively for fabricating such articles as steel piles.

Some 20 or more years ago the engineers of the Southern Pacific Railroad designed a type of pile in which three rails were welded together head to head along their lengths, the webs radiating at angles of 120 deg. from one another. It proved quite satisfactory, but there was some difficulty in the welding and, as other suitable sections of new steel were then comparatively plentiful and cheap, this pile did not become generally popular.

In present stringent circumstances, therefore, it is not surprising that a

somewhat similar but improved design of rail pile has been evolved by a firm in the U.S.A. Known as the Foster Rail Pile, it has advantages over its Southern Pacific predecessor, especially in respect of the welding. In it the bottoms and not the heads of the three rails are welded together. The webs and heads project outwards at 120 deg., providing a symmetrical section modulus round any axis with a heavy concentration of steel in the rail-heads or flanges; the triangular-arranged bottoms can easily be welded. Fabricated in such high-strength steel this section provides a pile that is extremely rigid and exhibits a notable resistance to distortion.

Severe Tests

This was recently demonstrated to a gathering of engineers, contractors and Government officials when three 80-ft. piles fabricated from three different sections of rail were driven to refusal in bed-rock by a single-acting steam

hammer rated at 30,000 ft.-lb. per blow. In fact, they were driven to a final penetration of at least 60 blows per in., yet none showed any distortion nor were the heads even marked by the hammer, it is stated. The pile with the lightest section was fabricated with 60-lb. rails rolled in 1882, and on withdrawal was found to be undamaged in any way.

Another severe test with piles composed of 60, 80, and 90-lb. rails consisted of the battering of each 200 times with a 17,500-ft.-lb. blow, their bases resting on a rigid 5-in. anvil plate; there was no visible effect on any of them reported.

Their success is said to be partly accounted for by improved welding techniques, the bottoms of the rails being welded with series of 4-in. long welds spaced at 16-in. centres and a continuous 12-in. weld at each end. For longer piles additional rail lengths can be added as required by butt-welding in the field.

DECLINE IN USE OF WOODEN WAGONS.—The Chesterfield firm of Edward Eastwood, wagon manufacturers, dismissed 22 employees on February 1 as redundant. The Managing Director, Mr. G. E. Hooton, attributed the redundancy to a decline in the use of wooden railway wagons which are built by the firm. "Railways are switching to metal wagons and the number of wooden wagons now in use is less than half the prewar number," he stated.

VALVE WELDING INSTALLATION.—Quasi-Arc Limited has developed and supplied an installation for welding flanges to valve casings for Newman, Hender & Co. Ltd., of Stroud, Gloucestershire. This consists of a welding head mounted on a pedestal which has hand-operated height and longitudinal adjustment of 10-in. and 16-in. respectively. The welding head can thus be

positioned accurately over the work. A curved nozzle is used to give access between the flange and the valve casing. The controls for the welding head are mounted on the pedestal. The equipment is used in conjunction with a standard 10-cwt. manipulator, the rotation of which is electronically controlled by remote push buttons at any selected speed between 0.5 to 0.95 r.p.m. The same installation can be used for welding a wide range of components on which circumferential welds are required.

WISSINGTON LIGHT RAILWAY TO CLOSE.—The Ministry of Agriculture announces that the Wissington Light Railway, in Norfolk, is to be closed on June 30. The line was leased for many years by the British Sugar Corporation, which owns the Wissington sugar beet factory served by

the railway. On expiry of the lease in March, 1941, the line, which is single-track, was taken over under war emergency powers by the Minister of Agriculture. The railway was formally reopened in July, 1941, after assistance in reconditioning the line and in general supervision had been given by the L.N.E.R. The British Sugar Corporation maintained the service as a haulage contractor and provided staff for the five locomotives. There are no signals or telephones on the 18-mile line. The railway makes physical connection with the Stoke Ferry branch of British Railways, Eastern Region, near Abbey Station. Some months ago the local growers were given the opportunity to take over the line, but this offer evidently has not been taken up and the Ministry considers that road services can carry the traffic at less cost.

ELECTRIC RAILWAY TRACTION SECTION

Locomotives or Multiple-Unit Sets?

ORDERS for 50-cycle multiple-unit equipment placed so far by the British Transport Commission have been for suburban and short-distance services, but extended use of multiple-unit trains on longer routes was proposed in the programme for modernisation and re-equipment of British Railways published in 1955. Main-line electrification from Euston to Birmingham, Manchester, and Liverpool, and from Kings Cross to Leeds and possibly York will raise the question of how the choice is to be made between multiple-unit working and locomotive haulage. This subject was discussed with reference to diesel-electric traction by Mr. S. G. Hearn, Chief Operating Superintendent, Western Region, in a paper to the Institute of Transport on November 19 last (see our November 23 issue). He quoted a number of shorter-distance, moderately-loaded services in the Western Region which could be worked economically with multiple-unit sets, but showed that the use of locomotives would be substantially more economical in motive power requirements on the longer routes.

Mr. Hearn's conclusions are as applicable to electric as to diesel-electric working. A typical 12-car multiple-unit train would tie up three sets of control and traction equipment, so that intensive use would be desirable on economic grounds. Where such a service can be diagrammed, the advantages of multiple-unit stock are well known, and higher speeds would increase the practicable radius of action. Thus, although Euston-Birmingham-Wolverhampton is the type of service that first comes to mind, Kings Cross to Leeds might be suitable, and electrification to Bradford would enable a four-car unit to be detached at Wakefield to serve Bradford, rejoining the main train in the up direction. It is assumed that such trains would not call at intermediate stations between London and Doncaster. On similar lines, multiple-unit working might be appropriate for certain fast trains between Euston, Manchester, and Liverpool, but not for general utility services calling intermediately several times for the purpose of connections and liable to convey vans and other additional vehicles. In main-line work the quick turn-round of the multiple-unit train would need to be allied with quick transits in order to ensure maximum revenue-earning service.

If electrification were to be extended beyond the limits of the present plans, it is for consideration whether a case might be made for multiple-unit working of fixed-formation services such as the prewar Anglo-Scottish streamliners. Here the problem would be to conform with the times at which traffic offers for a high-speed service, and still operate a quick return trip. A train leaving London for Edinburgh at 4 p.m. on the former "Coronation" schedule would need to return as an overnight sleeping service. The stock might be adapted for this purpose by being equipped with reclining chairs, but then the anomaly would be presented of the same coaches being used in one direction for a high-speed service with emphasis on comfort, and in the other direction for a utility form of night travel. The addition of suitably wired trailers has been suggested, but although this practice is used on some small electrified systems abroad, the extra vehicles would be likely to reduce the performance to an unacceptable extent.

Multiple-unit trains in this country have earned criticism for rough riding in the past, and this was acknowledged in the modernisation plan by the statement that research had been undertaken into the design of bogies for electric multiple-unit vehicles which were expected to provide an entirely satisfactory standard of passenger comfort. Although two years have elapsed since that statement, and something like four years since practical tests with spring-borne motors were carried out, no information has been

given so far of the nature of the experiments or of the conclusions drawn from them. Meanwhile more multiple-unit main-line and interurban stock has gone into service and criticism has been heard again, though some of it does not carry conviction. However, Mr. S. B. Warder, Chief Electrical Engineer, British Railways Central Staff, spoke of continuous speeds of 90 m.p.h. and over when considering the role of multiple-unit trains in his report to the Sixteenth International Railway Congress in London, as mentioned in our issue of February 19, 1954, and information on how the problem of poor riding at speed is being approached would help to overcome objections which spring partly from prejudice. This will be particularly necessary if multiple-unit trains are to play the part in restoring to the railways a lead in rapid, frequent, and comfortable transport which was foreseen by Mr. Warder. His references to the convenient provision of auxiliary power in multiple-unit sets are now of particular significance, for competition from other forms of transport will inevitably increase the demand for amenities in trains which can be provided most readily by suitable conversion of the traction supply.

Cab Comfort

AN unobstructed outlook, comfortable seating, and convenient grouping of controls and instruments lose some of their value if the cab is draughty or inadequately warmed. Sometimes weaknesses in this direction which are not apparent during construction make themselves felt in service. Studies undertaken in electric locomotives of the Belgian National Railways showed that with the electric heating originally installed there were differences of as much as 84 deg. F. between the temperature at floor level and at the average level of the driver's head when seated. At that time a single 1,600-W. heater was mounted vertically on the floor against the rear wall of the cab. Before construction began of the 133 Bo-Bo locomotives of classes "122" and "123," various schemes of improvement were investigated in collaboration with the Société d'Electricité et de la Mécanique (S.E.M.), as a result of which a closed circuit system was adopted. In this arrangement, which has been described by Monsieur J. Neruez of the S.N.C.B. in the January, 1957, issue of *La Traction Electrique dans les Chemins de Fer*, a false floor is fitted in the cab and is pierced with apertures for the passage of heat in the region of the dead man's pedal. General heating comes from a horizontal 1,500-W. heater behind the driving seat, and warm air from inside the cab is circulated by a motor-driven fan through a 1,000-W. heater on the locomotive underframe and so into the space beneath the false floor. There is an inlet from outside the cab to the underframe air heater to prevent damage to its elements by overheating in case of a fan failure while the locomotive is stationary. This inlet is protected by a cowl and arranged at right angles to the locomotive axis so as to have no effect while running, which prevents disturbance of the normal airflow when meeting other trains, entering tunnels, passing from embankments to cuttings, and so on. Readings taken with an outside temperature of 36½ deg. F. have shown a floor temperature near the dead man's pedal of 60½ deg. F. with an air temperature 4 ft. 11 in. above the floor of 66½ deg. F. The heating systems in both cabs operate together because of the frequency with which drivers transfer from one cab to the other on many duties in Belgium, where runs in general are short. Detailed study of this subject is valuable, for in ensuring a comfortable cab there is more than the outside temperature to reckon with, severe and unforeseen draughts being likely to be caused by obstruction of the normal intakes for traction motor ventilating air.

Pneumatic-Tyred Trains on Paris Métro

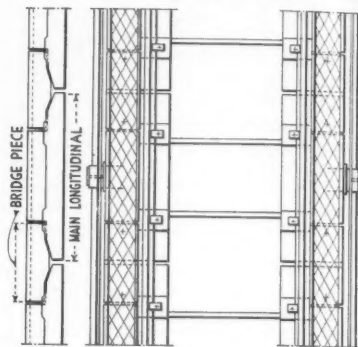
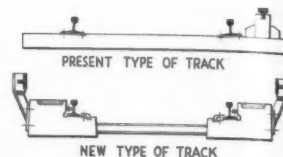
Increased adhesion, lighter stock, improved acceleration and braking, with absence of noise: signalling and point operation remain in principle unaffected

SOME years ago the management of the Paris Metropolitan city services, faced with the necessity at no distant date of providing improved facilities and in any case of effecting extensive renewals of rolling stock, tried to find a way to do so without incurring the great cost associated with any substantial lengthening of the trains, necessarily involving appreciable civil engineering works at the stations, while at the same time improving the standard of comfort of travelling, principally by eliminating noise. If greater acceleration and braking effects could be obtained, enabling the signal spacing to be reduced, a noticeable improvement in the services could be achieved without changing the composition of the trains. A shortening of station times could be effected by providing greater facilities for entering and alighting from the trains expeditiously.

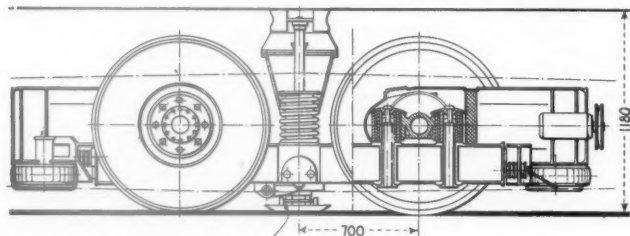
The investigations led to the development of a vehicle running on pneumatic tyres on a modified form of track, and for some time this was operated experimentally on a short single line

shuttle service between Porte des Lilas, Line 11, and Pré St. Gervais, Line 7, of the R.A.T.P. (Régie Autonome des Transports Parisiens). This service, although not indicated on the official maps of the system shown at the stations, is popular, especially at certain times, as the walk between the points it joins is not an easy one, especially in bad weather. The experimental car having given every satisfaction, it was decided to convert the Line 11, about four miles long, which runs from Châtelet, in the centre of Paris, where Lines 1, 4 and 7 intersect, to the Mairie des Lilas, in the north-east, and has 11 intermediate stations, to operate on the new method. Some of the new coaches constructed for this service have been on exhibition recently and the official inauguration of the new train service has now taken place.

Pneumatic-tyred wheels had been known, of course, in France on the "Micheline" rail cars and on some main line stock, but they used steel treads on ordinary permanent way. Such an arrangement was not admissible

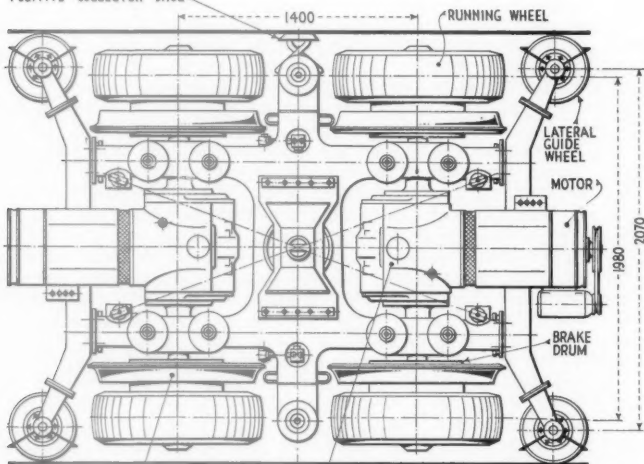


Details of track used with pneumatic-tyred trains



NEGATIVE COLLECTOR SHOE SERVING ALSO TO ACTUATE TRACK CIRCUITING

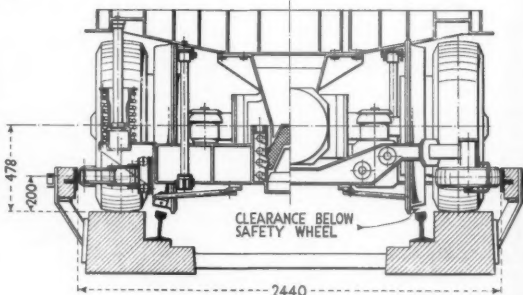
POSITIVE COLLECTOR SHOE



SAFETY WHEEL SERVING ALSO TO GUIDE BOGIE OVER POINTS AND CROSSINGS

DIFFERENTIAL AND REDUCTION GEAR ASSEMBLY

General arrangement of pneumatic-tyred bogie and cross section of track



under the load limitations applying on the Métro. On the other hand the use of pneumatic tyres running not on ordinary rails but on a smooth road-type surface with laterally bearing guide wheels to keep the vehicles in line offered attractive possibilities and was proved to be practicable on the short experimental section. Noise was to all intents and purposes eliminated, while the greater adhesion obtained permitted of more rapid acceleration and braking, and enabled a lighter car body to be used, with some reduction in power consumption.

Features of the New Working

The accompanying drawings illustrate the new bogies and form of track used with them. Ordinary rails are still provided but except at points, which are relatively few on the Paris Métro compared with, say, the London Underground, they serve only to carry the return traction and signalling currents or to act as an emergency support should a tyre become irregularly de-

flated. Inside the pneumatic-tyred running wheels are steel safety wheels with extra deep flanges. Normally these are clear of the steel rails but bear on them if a tyre fails. On each side of the track are "T" shaped guide rails, carried at intervals on insulating supports and serving as positive conductor rails, against which bear the lateral guide wheels—which also have pneumatic tyres—and the side running collector shoes. The negative collector shoes run on the steel safety rails. At points and crossings it is, of course, necessary to have gaps in the guide rails and here the vehicles are kept in place by the deep flanges on the safety wheels; the construction of the points and their method of operation remain as before. At these locations ordinary transverse sleepers are used and timber runway pieces laid in for the main bogie tyres to travel over. The track circuit signalling arrangements are not interfered with, the negative collector shoes serving to provide the shunt across the steel rails instead of wheels as hitherto. It is necessary, however, to readjust relay and impedance bond characteristics to meet the more sensitive conditions obtaining.

Engineering Details

A bogie consists of two heavy "lorry back axle" assemblies, with differential and reduction gear, each actuated by a 70 h.p. motor attached through an elastic suspension to an H-shaped framing carrying the lateral positive and vertical negative collector shoes and, at the corners, the guide wheels. The general spring suspension arrangements are somewhat simpler than usual as the tyres provide some initial absorption of running shocks. A cam shaft 25 notch controller governs the four motors of a car in series or series-parallel combination. Normal acceleration rate is nearly 4.43 ft. per sec. per sec. Braking is electro-pneumatic, with Westinghouse as a



Complete train on pneumatic tyres for use on Line 11, Châtelet-Mairie des Lilas, showing head and tail signals and destination indicator

supplement, with hand brake on the motor shafts. There is considerably less brake rigging than on earlier stock. The service braking deceleration is nearly 4.76 ft. per sec. per sec., or 8.2 in an emergency. The end couplings of a train set, which usually will consist of three motor coaches—two with driving cabs—and a trailer, are of standard Métro pattern, but a new simplified form is in use at the intermediate positions. The car bodies, which generally resemble the articulated stock used on Line 13, have fluorescent lighting and improved wide pneumatic doors, opened always by the passenger but closed by the guard. Seats have been reduced to 96 per four-car train against 111 at present, with proportionately increased standing room, always very large on this line, but there

are 118 tip-up seats for use at less crowded times, so that most passengers then will be able to travel seated. Each driving cab has a recording speedometer.

Installing the New Track

On a new line the track could of course be designed to be attached directly to the tunnel invert but in this case had to be laid on the ballast already there, without interrupting the existing service. Ferro-concrete longitudinals, with steel tie bars, carry in a shallow top recess the bituminised pathways for the tyred wheels and on their inside surfaces the ordinary rails, resting on rubber blocks and held by elastic fastenings. The old conductor rail had to be kept mounted on one side at first, but as soon as one guide rail was in position the old trains, by then fitted with side bearing collector shoes, could take power from that and the rail could be replaced by the second guide rail. Except at Châtelet, where the platform was raised 5½ in., for local reasons, the lines were lowered elsewhere by this amount by reducing the ballast, to meet certain dimensional requirements of the new stock. Platform faces had to be taken back 2 in. to clear parts of the old vehicles in consequence. Passengers now walk into the new cars absolutely on the level.

Maintenance Facilities

The existing facilities for shunting and parking trains at the termini, Châtelet and Mairie des Lilas, and for inspection and overhaul of vehicles, had to be modified to cover the transitional period, when both old and new trains would run concurrently. Special provision has been made at Lilas for dealing with the new bogies which, when necessary will be removed from the car bodies and sent on special wagons by means of the

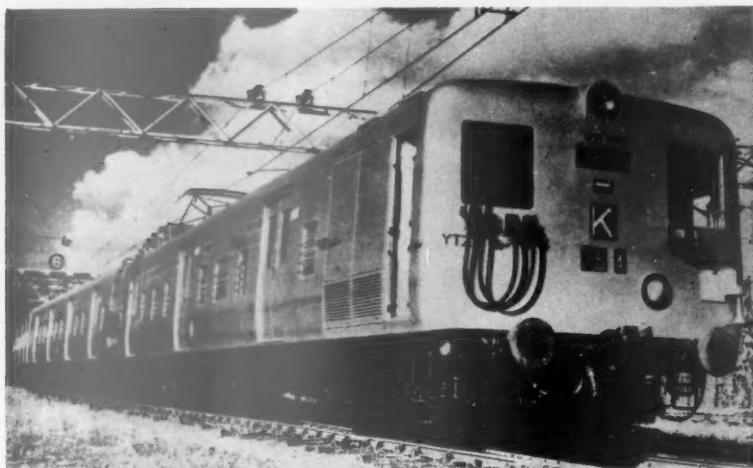


New bogie, showing differential assemblies, guide wheels, brake cylinders, and side collector shoe

(Continued on page 195)

Electric Stock for Central Railway, India

Broad-gauge four-car sets for Bombay suburban services



Italian-built four-car electric set for Bombay suburban traffic

THE 24 broad-gauge electric train units now under construction by Breda Ferroviaria, Milan, are intended for service on the Bombay suburban services of the Central Railway. Traction equipment on the first 12 units is by the English Electric Co. Ltd., although the further 12 units being planned will have equipment supplied by Ansaldo San Giorgio, Genoa.

Because the particular technical characteristics required, and the operating environment, differ considerably from normal European requirements, special attention has had to be paid to constructional features. For some years Breda Ferroviaria has been interested in diesel and electric powered units, and has been able to draw on considerable experience.

Composition and Construction

Each set consists of two motor coaches and two trailers and provides accommodation for 72 upper class and 515 lower class passengers. Four sliding doors on either side of each coach allow easy access for passengers. Features intended to cope with rush-hour crowds on runs with many intermediate stops include sliding doors, floors at platform height, and seating arranged to leave ample space for standing passengers, with conveniently placed hand grips.

Although intended for short runs only, passenger comfort and appearance of design have been carefully considered. Because of the hot and moist climate, special attention has been given to heat insulation of the coaches and an air gap has been devised to allow circulation of air between an outer and inner shell which forms the exterior and interior body surfaces of the cars. Air circulation in these air

gaps takes place by convection because of the temperature difference between the outer and inner surfaces. It is, however, increased when the train is in motion by four Flettner type rotating ventilators fitted on the roof which utilise the flow of air due to the movement of the train.

Other Flettner ventilators draw out stale air from the compartments through suitable ports. Additional air circulation inside the coaches is obtained by an adequate number of

electric fans. Special panelling is used on the side walls of the compartments to further increase the heat insulation of the air gap. The outer face layer is of Rexilan, a resinated wood, while the inner layer, i.e. towards the air gap, is of aluminium sheet. Between these two layers there is another layer made of Ultralite, a resinated glass wool insulating material.

The inside walls of the compartments are painted in various shades of blue and green for the upper and lower classes respectively. Fittings and luggage racks are polished aluminium alloy, and a stainless steel skirting is fitted to the dark red floor. All joints where the floor meets body sides and seats are made watertight to allow hose washing to be carried out.

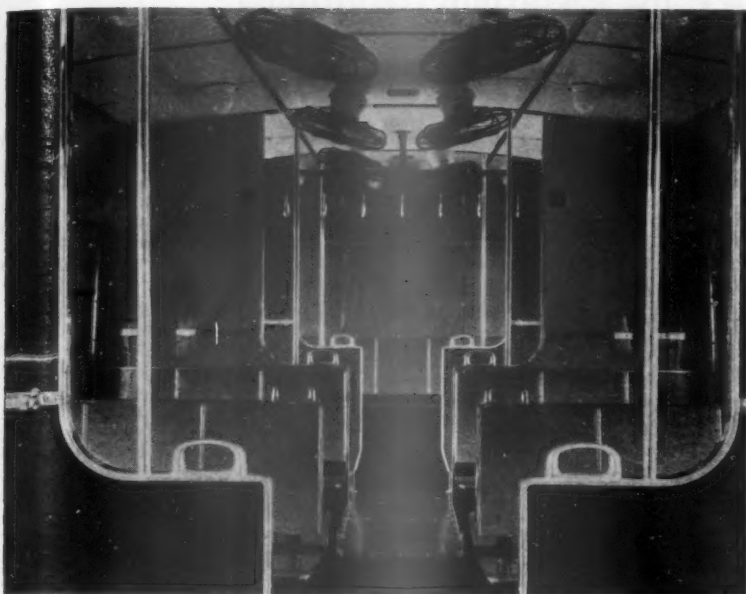
Window framing, and louvres to protect passengers from strong sunlight, are of aluminium alloy. On the lower part the louvres have actinic-treated glass panes to enable passengers to look through the windows even when the louvres are down. Lower class seats are of Melaminic resin panels, while upper class seats have cushions and backs of foam rubber covered by plasticised purple-red cloth.

Electrical Equipment

Incandescent electric lighting, of 120 V. d.c., is employed, opaline rounded ceiling fittings being used. Current for lighting is obtained from two motor generators, one on each motor coach. Each of these generators



Interior of upper class coach, showing seating arrangement



Lower class coach interior showing lighting, fans, and seat layout

feeds all the bulbs on one side of the set, and thus, in the case of failure of one generator, one half lighting strength is ensured. Some of the ceiling fittings are fed by batteries, instead of the generators, so that in the event of both units failing some light will be available. Provision for route and train number indication is made by illuminated panels at each end of the set.

Specifications insist on characteristics to meet severe service conditions, which include frequent stops and high accelerations under arduous climatic conditions. Two motors are located on each of the motor coach bogies giving a total of eight motors per set. The motors are series-connected in pairs,

overhead line voltage being 1,500 V. d.c. The total capacity of each set is 1,400 h.p., which enables speeds up to 65 m.p.h. (105 km/h.) to be attained.

The equipment located under the frames is arranged to be watertight up to a height of 2 ft. 6 in., so as to enable trains to run through floods due to monsoon conditions. Devices are fitted on the roof adjacent to the pantographs, to protect the equipment from overloading and lightning.

Braking Equipment

Braking equipment is of the electro-pneumatic type. The driver's brake handle can be moved into five positions: normal running setting, electro-

pneumatic braking, lap position, automatic or pneumatic braking, and emergency braking which effects simultaneous acting of the electro-pneumatic and pneumatic braking systems. A panel fitted with buzzer and indicator light informs the driver whether the electro-pneumatic braking is acting correctly. All the electric and pneumatic equipment has been installed and grouped to give ease of maintenance and replacement.

Bogies

The bogies, frames, and swinging bolsters are made of riveted steel sections and plate. The swinging bolster is divided into two portions, the upper portion containing the pivot and bearers. Between the portions is a springing system consisting of four spring sets with three concentric helical springs. The swinging bolster is suspended to the frame by means of four sloping links to allow for the hunting movement of the superstructure. The upper part is guided into the bogie frame by replaceable Ferobestos plates secured to the frame, and by manganese steel plates secured to the bolster, thus reducing the rate of wear.

Axlebox suspension is by means of a leaf spring and two helical springs. These can be suitably regulated. Axleboxes are fitted with manganese steel wearing liners which slide against replaceable Ferobestos guides fitted to the axle guards. A passenger chain alarm signal is provided, operated by means of handles. The chain pulls a switch which releases a bell in the driver's compartment and, simultaneously, mechanically operates an exterior signal at the end of the coach where the alarm has been released. Inter coupling of coaches is secured by Alliance mechanical automatic couplers and bridge mating buffers. Majex couplers and standard type buffers are fitted at the end of each set.

Pneumatic-Tyred Trains on Paris Métro

(Concluded from page 193)

spur lines connecting routes 11, 3 and 7 to the general repair shops on the last named at Choisy. (The shops at St. Fargeau, on Line No. 3 have been dealing temporarily with certain work while the facilities at Châtelet were being enlarged.) Car bodies will also be sent, when required, to Choisy, mounted temporarily on special flanged wheel bogies.

Some Comparisons

Leaving aside the special articulated stock used on ordinary track on Line 13, a little lighter than the older pattern, it is to be noted that the new motor bogie weighs 5 tonnes against 10.2 for ordinary stock and a trailer bogie 2.75 against 4.2. A complete new motor coach weighs from 20.2 to 20.6 tonnes, compared with 40 previously, and a trailer 14 tonnes, against 20 in the old trains.

A four-car train of ordinary design weighs as a maximum, empty, 120 tonnes and can carry 594 passengers. (There is, however, another design of the same formation weighing 111 tonnes and carrying 570.) With the new pneumatic-tyred stock, however, the weight is 75.2 tonnes for 650 passengers, giving a saving of 32 per cent total train weight against the lighter weight formation of the old type, with, of course, a saving in power consumption.

We are indebted to Monsieur Georges Ricroch, Chairman of the board of the Régie Autonome des Transports Parisiens, for the illustrations and information reproduced in this article.

B.I.S.R.A. OPEN DAYS.—The British Iron & Steel Research Association will hold two open days at the Sketty Hall, Swansea, laboratories, on June 20 and 21, for representatives of B.I.S.R.A. member firms and users of steel sheet and strip throughout

industry. The Sketty Hall laboratories are devoted to research into problems concerning steel coatings and methods of surface preparation conducted by the Association's Mechanical Working Division. The open days will provide the opportunity for showing improvements in existing coating methods which have been achieved, also developments in the use of new coating materials. Demonstrations will be given on the recently installed experimental line for the production of PVC-bonded steel strip, and on the differential roller tinning pilot plant now being built. Other projects, including the continuous lacquering of steel strip, the use of iron-zinc and iron-tin alloys, and research into methods of gaseous deposition of metallic coatings, will also be displayed and demonstrated.

WHITE COATS FOR SHUNTERS.—During a recent inquest at Bury on a railway guard killed by a locomotive, the coroner, Colonel R. M. Barlow, suggested that railwaymen employed on shunting work could wear white coats like those worn by policemen on point duty.

Accountancy by Electronic Multiplier

Preparation of traders' accounts reorganised in Eastern and North Eastern Regions

THE first electronic installation in an office to be introduced in the Eastern and North Eastern Regions of British Railways is now in the Regional Accountant's coal audit office at Peterborough. One of the principal functions of this organisation is to raise and account for carriage charges on coal, coke, and patent fuel despatched from all points within the two Regions. Carriage charges are calculated on some 75 million tons of fuel a year passing between 35,000 separate pairs of points from collieries, gasworks, and other forwarding points in the regions and monthly accounts are compiled and posted to traders representing an annual rail revenue of £55 million.

For a number of years this work has been accomplished by a combination of clerical effort and Hollerith electro-mechanical punched card accounting machines. One simple calculation each month, weight of fuel carried between each pair of points multiplied by the rate per ton applicable for the particular journey, is the basis of the organisation, but the geographical extent of the Eastern and North Eastern Regions coupled with the statistics already quoted, result in a large number of individual calculations per month. Previously a large staff had to operate

at very high pressure within the limit of a few days at the close of each month to facilitate the early rendering of traders accounts.

During 1956, a Hollerith electronic multiplier and other punched-card equipment of advanced design were introduced and the carriage charging system was reorganised to utilise the full potential of the new installation, with the result that the procedure is now almost completely automatic.

Electronic Computer

The electronic computer is now brought into use to carry out the operations of multiplying weight in tons and hundred-weights by the rate per ton in shillings and pence, verifying the answer and punching the resultant carriage charge in sterling in the appropriate column on each card. This process is carried out as a daily routine at the extremely rapid rate of 6,000 calculations per hour.

Towards the close of each month, the cards for individual consignments are sorted mechanically into trader and date order and with these are amalgamated further cards programmed to produce the name and address of each firm. At the close of the month, all cards are fed into a Senior Rolling Total Tabula-

tor which produces a complete account for each trader. Details of each days forwardings are shown for every pair of points, and weight and carriage charges are totalled at the foot of each page and at the end of the account. Continuous stationery is used and by this means the tabulator operates over a long period without interruption.

The new equipment and revised office organisation have been in operation for several months and it can be claimed that all the advantages hoped for are being achieved. The organisation has benefited from the introduction of daily charging which effectively spreads the work of the office evenly over the course of each month, thus avoiding the previous undesirable peak of activity at the close of the charging period. It is now possible to produce a greater wealth of statistical information and analyses of traffic-flows which are proving invaluable to the commercial officers. Substantial economies have already been achieved and it is hoped that these can be extended by utilising for other suitable work any margin of time still available on the electronic machine.

In time, similar installations, more advanced in their techniques, will be introduced for other work.



Reproducing gang punch and high-speed punching machine



Alphabetical and numerical printing tabulator

RAILWAY NEWS SECTION

PERSONAL

At an investiture held by H.M. the Queen at Buckingham Palace on February 12, Sir Arthur Kirby, General Manager, East African Railways & Harbours Administration, received the K.B.E. Sir John Pascoe, Chairman & Managing Director of British Timken Limited, and Sir J. Landale Train, Member of the British Transport Commission, were made Knights Bachelor.

Co. Ltd. of Stockport. He is a member of the Institute of Transport, a Fellow of the Institute of Chartered Accountants and a Fellow of the Royal Statistical Society. He retired from the Territorial Army in 1952 with the rank of Lt.-Colonel, and holds the Territorial Decoration.

Mr. J. W. J. Webb has been appointed Regional Accountant, Western Region, British Railways.

Year Honours List of 1945. In October of that year he was elected to the Executive Committee of the Southern Railway.

Mr. S. E. Raymond, who, as recorded in our February 1 issue, has been appointed Chief Commercial Manager, Scottish Region, British Railways, began his career in the Civil Service. In 1946, he joined the London Passenger Transport Board and, after holding important appointments in staff management



Mr. W. Harris-Burland

Appointed Director of Accounts & Statistics, Finance Department, B.T.C.



Mr. S. E. Raymond

Appointed Chief Commercial Manager, Scottish Region

Mr. W. Harris-Burland, C.B.E., formerly Director of Statistics, British Transport Commission, who, as recorded in our January 18 issue, has been appointed Director of Accounts & Statistics, Finance Department, B.T.C., was educated at Whitgift School and articled to a firm of Chartered Accountants in the City of London. He served in the accountancy profession in Great Britain and on the Continent for 20 years, followed by 14 years in Government service. His transport experience includes the management of inland waterway transport undertakings, the extensive chartering of foreign shipping for H.M. Government and a period as head of the Transportation Section of the Allied Control Commission in Rumania. In 1946 he was appointed Controller of the large German industrial concerns and carried out a de-concentration and re-organisation of the German iron and steel industry. He joined the British Transport Commission in 1953 as Director of Statistics. Since 1953 Mr. Harris-Burland has been a Director of the North Western Road Car

We regret to record the death on February 8 of Mr. W. J. England, O.B.E., M.Inst.T., Superintendent of Operation, Southern Railway, 1942-45. Mr. England was born at Instow, North Devon, and received his early training on the former London & South Western Railway. After obtaining station experience at Chard Junction, Bentley, Farnham, and Farnborough, he was transferred to the office of the Superintendent of the Line. In 1912 he was appointed Assistant Divisional Superintendent, Exeter, and later acted for a short time as Traffic Superintendent of the Somerset & Dorset Joint Railway. On the formation of the Southern Railway he became General Assistant to the Chief Operating Superintendent, and, in 1930, was made Trains Assistant to the Superintendent of Operation. In 1933 he was appointed Assistant Superintendent of Operation, and, in July, 1942, Superintendent of Operation, the position from which he retired on March 31, 1945. Mr. England was made an Officer of the Order of the British Empire in the New

and administration with London Transport and British Road Services, was appointed in 1955 to the Headquarters of the British Transport Commission as Assistant Manpower Adviser. He was a Member of the Board of Management of Pickfords from 1951 to 1955. In 1956 he became Director of Establishment & Staff, British Transport Commission, the position he now vacates on his appointment as Chief Commercial Manager of the Scottish Region. During the war Mr. Raymond served in H.M. Forces overseas and was demobilised in 1946 with the rank of Lt.-Colonel.

Mr. W. P. Gill, Personnel Manager, New Zealand Railways, has retired. This event marks the close of a total period of family railway service of more than 116 years, which goes back to the pioneering days of the Manawata Railway Company. Mr. Gill's father, his two brothers, their daughters and his own daughter and son have served on the railways. His father helped to pierce the first tunnels between Wellington and Paekakariki.



Mr. F. G. Manning

Appointed Administration Officer, Finance Department, B.T.C.



Mr. Donald Murray

Appointed Assistant Traffic Adviser (Freight), British Transport Commission



Mr. J. R. Hammond

Appointed Assistant to the General Manager (Modernisation), Western Region

Mr. F. G. Manning, Senior Assistant, Accounts Division, Finance Department, B.T.C., who, as recorded in our January 18 issue, has been appointed Administration Officer, Finance Department, B.T.C., joined the Commission early in 1948 to assist in carrying out special functions connected with the acquisition of road haulage undertakings. He was also concerned in negotiations arising from the purchase by the Commission of road passenger undertakings. Previously he had spent 12 years with London practising accountants during which time he became a member of the Society of Incorporated Accountants. After a period in commerce and war service, he was employed by the Ministry of Transport as a senior investigator engaged in the settlement of the accounts of road hauliers controlled during the war.

Mr. P. J. Fisher, Modernisation Assistant to the Chief Operating Superintendent & Chief Commercial Manager, London Midland Region, British Railways, has been appointed Divisional Operating Superintendent, Crewe.

Mr. A. G. Croxall, District Commercial Manager, Peterborough, Eastern Region, British Railways, retired on January 26 after more than 52 years of service in railway commercial affairs.

Mr. W. F. Leeming, Senior Engineering Assistant, Chief Civil Engineer's Office, Paddington, Western Region, British Railways, has been elected an Associate Member of the Institution of Civil Engineers.

We regret to record the death on February 3, of Air-Vice Marshal Oswyn George William Gifford Lywood, C.B., C.B.E., L.M., a Director of the Automatic Telephone & Electric Co. Ltd., 1946-55. His senior appointments during the last war included those of Director of Signals at the Air Ministry and, from 1942 until his retirement, Air Officer Commanding No. 26 Group, R.A.F. After his resignation because of ill-health, he remained a valued consultant and continued as Chairman of A.T.E. (Bridgnorth) Limited—an A.T.E. Group company—until the time of his death.

Mr. Donald Murray, who, as recorded in our January 18 issue, has been appointed Assistant Traffic Adviser (Freight), British Transport Commission, was educated at Derby School and Jesus College, Oxford, where he obtained first class honours in natural science (chemistry). Following a period in research work, he joined the L.N.E.R. in 1924 as a traffic apprentice and subsequently held positions at Middlesbrough and York. From 1930, he successively became Staiths Superintendent at Hartlepool; Dock Superintendent at St. Andrew's Docks, Hull; Goods Agent, Hull; Assistant District Goods Manager, Newcastle; District Goods Manager, Newcastle, and District Goods Manager, Hull. From January, 1943, to August, 1946, he was Assistant Goods Manager, North Eastern Area, and also acted as Assistant Passenger Manager until October, 1945. He was appointed Mineral Manager, Southern Area, in 1946. In 1948, Mr. Murray became Executive Officer (Mineral Traffic) at the Railway Executive Headquarters, and continued in this position in the department of the Chief of Commercial Services in the interim organisation of 1953. He was appointed Chief Freight Officer, British Railways Division, in 1954, adding responsibility for freight traffic to his duties in connection with commercial mineral traffic. He is a Member of the Institute of Transport and has served on the Council of that body.

We regret to record the death in Warsaw of Dr. Josef Wagner, who had a long and distinguished career with the Russian and, later, the Polish State Railways. Dr. Wagner, who was born in 1882, began his railway service in the Mechanical Department of the Russian Railways in 1905, subsequently becoming Head of the workshops. After service with the Ministry of Transport in St. Petersburg during 1914-18 when he dealt primarily with traction and workshop matters, Dr. Wagner was appointed to a managerial position on the newly formed Polish State Railways in 1918. He served in various capacities until 1939 and was closely connected with the work of the International Union of Railways (U.I.C.). From 1945 to 1949, when he retired as Vice Director of the Ministry of Communications at Warsaw, he was active in the reconstruction of the Polish

railways and their international relations, and until his recent death he contributed much to international railway co-operation as Technical Adviser to the Polish Railways Ministry. Last December he attended the annual Board Meeting of the International Union of Railways as a member of the Polish delegation.

Mr. J. R. Hammond, M.B.E., B.Sc., A.M.I.C.E., who, as recorded in our February 8 issue, has been appointed Assistant to the General Manager (Modernisation), Western Region, British Railways, entered the service of the Great Western Railway as Surveyor & Draughtsman in October, 1937, having previously been a pupil of the company's Chief Engineer. Engaged on new works schemes, he was, for a time, loaned to the Ministry of Aircraft Production. Mr. Hammond returned to the office of the Chief Engineer in February, 1941, and became Resident Engineer of several works carried out as war measures. In October, 1942, he joined H.M. Forces, with which he attained the rank of Major, was awarded the M.B.E. (Military Division), and mentioned in despatches during service in Italy. He returned to railway service in February, 1946, as Assistant in the Divisional Engineer's Office, Bristol. He was transferred to Neath as Assistant Divisional Engineer in June, 1947, and, in May, 1948, became Personal Assistant to the Chief Engineer at Paddington. Three years later he moved to Newport as Assistant District Engineer. Mr. Hammond became District Engineer, Cardiff, in June, 1952, and to a similar position at Wolverhampton in January, 1953. It is this appointment he now relinquishes.

Mr. J. W. Babbs has been appointed Technical Development Manager, and Mr. Kozlowski, Chief Development Chemist, of the newly-formed Technical Development Department of Expandite Limited.

Mr. Harry McBride, who, as recorded in our February 8 issue, has been appointed General Agent, Bristol, Canadian Pacific Railway, joined the C.P.R. in Belfast in 1929 and was transferred to the London City office in 1937. He was appointed Freight Agent, Liverpool, in 1953, the position he now vacates.



Mr. R. E. Evans

Appointed District Engineer, Ipswich,
Eastern Region



Mr. B. L. Bell

Appointed District Engineer, Barrow,
L.M. Region



Mr. C. J. Hind

Appointed Chief Engineer (Engines),
Ruston & Hornsby Limited

Mr. R. E. Evans, B.Sc. (Eng.), A.M.I.C.E., Assistant District Engineer, Peterborough, Eastern Region, British Railways, who, as recorded in our January 25 issue, has been appointed District Engineer, Ipswich, began his railway career in 1933 on the former L.M.S. in the Chief Engineer's Office at Euston. In 1936 he transferred to the District Engineer's Office, Watford. From 1939 to 1946 Mr. Evans served with the Royal Engineers in India and the Middle East, and for the three last years commanded a Railway Construction Company with the rank of Major R.E. After demobilisation he returned to Watford, and, in 1947, was appointed Outdoor Engineering Assistant at Crewe. In 1950 he became Senior Assistant in the Maintenance Section of the Civil Engineer's Office at Kings Cross, Eastern Region. A year later he was appointed Senior Technical Assistant in the District Engineer's Office, Doncaster. His appointment as Assistant District Engineer, Cambridge, took place in May, 1953, and, in 1955, he transferred to Peterborough in a similar capacity. It is this position he now leaves.

The following staff changes have been announced by London Midland Region, British Railways:—

Mr. J. Parkhouse to be Assistant District Operating Superintendent, Stoke.

Mr. W. P. Craig to be Assistant District Motive Power Superintendent, Carlisle.

Mr. A. J. Powell to be Assistant District Motive Power Superintendent, Newton Heath.

Mr. G. Oldham to be Assistant Works Manager, Crewe, Chief Mechanical & Electrical Engineer's Department.

Mr. A. T. Garnett to be Assistant Works Manager, Horwich, Chief Mechanical & Electrical Engineer's Department.

Mr. J. G. Handley to be Stationmaster, Derby, also i/c Nottingham Road.

The fleet of ships previously known as Associated Humber Lines and owned by British Railways, Wilsons & North Eastern Railway Shipping Co. Ltd., and Hull & Netherlands Steam Ship Co. Ltd., will in future be operated by a private limited company registered as Associated Humber Lines Limited. The board is constituted as

follows: Mr. H. A. Short (Chairman), General Manager, North Eastern Region, British Railways; Mr. J. R. Fewlass, Chairman & Managing Director, Ellerman, Wilson Line Limited; Mr. L. E. Marr, General Manager, Associated Humber Lines Limited; Mr. T. R. Hawkes, Regional Accountant, Eastern & North Eastern Regions, British Railways; Mr. J. S. Birch, Assistant Director of Accounts, B.T.C.

Mr. B. L. Bell, B.Sc. (Eng.), A.M.I.C.E., who, as recorded in our January 18 issue, has been appointed District Engineer, Barrow, London Midland Region, British Railways, entered the service of the L.M.S.R. in the Divisional New Works Office, Derby, in June, 1927, at a time when new branches in the Nottinghamshire coalfield and other major works were being planned and constructed. From November, 1928, when he was transferred to the London district, Mr. Bell had further experience on new works in connection with widening, electrification, and the construction of new stations on the London, Tilbury & Southend section as well as on the general maintenance and renewal work of a district, and, during the war, on repair and reconstruction following damage by enemy action. In December, 1943, he was appointed Chief Draughtsman in the Blackburn District Engineer's Office and, in December, 1945, Assistant District Engineer, Barrow-in-Furness. He was transferred to the North Eastern Region as Assistant District Engineer, Newcastle, in January, 1952, the position he now vacates.

Mr. G. R. H. Nugent and Mr. Airey Neave, Joint Parliamentary Secretaries to the Ministry of Transport & Civil Aviation, have appointed Mr. J. R. Steele and Mr. J. Peeler respectively to be their Private Secretaries.

Mr. L. H. E. Jones, of the Overseas Division of Expandite Limited, left for a tour of Scandinavia on February 17.

Directors of the newly-formed Lloyds-Brake Shoe Limited, referred to elsewhere in this week's issue, are as follow: Messrs. W. B. Given, Jnr. (Chairman), F. N. Lloyd (Vice-Chairman), E. Allison, D. J. Bridge, W. R. Cooper, K. Dunn, A. B. Lloyd, G. Sammons, and H. P. R. Scott.

Mr. C. J. Hind, who, as recorded in our January 18 issue, has been appointed Chief Engineer (Engines), Ruston & Hornsby Limited, formerly served with that company's associates, Davey, Paxman Limited. Five of a total of 14 years' service were spent as Chief Diesel Designer of that company and a subsequent three as Chief Diesel Engineer. Mr. Hind has travelled widely: in addition to tours in Europe, the Far East, and the Americas, he has visited diesel engine plants in the U.S.A., including the U.S. Naval Research Department at Annapolis under the auspices of the British Admiralty. He was responsible for the design of the Paxman YHA engine, a unit in the standard Admiralty range, and the whole of the current Paxman range was designed during his tenure of office as Chief Diesel Designer. The new appointment became effective on January 1 this year.

Mr. J. H. Evans, General Manager of Mountstuart Dry Docks Limited and Associated companies, is retiring after 52 years in the ship repairing industry in the Bristol Channel.

Mr. C. A. Henderson, Manager in the Levant for the Metropolitan-Vickers Electrical Co. Ltd., recently returned to this country. Shortly before he left he was decorated with the Order of the Cedars, Officer's Degree in recognition of, and gratitude for, his work in Lebanon.

Mr. A. E. Grimsdale, Special Assistant, Sales Management, Metropolitan-Vickers Electrical Co. Ltd., and a director of Metropolitan-Vickers Electrical Export Co. Ltd., has been appointed Manager, Home Sales, with special responsibility for home district offices, of the Metropolitan-Vickers Electrical Co. Ltd.

Mr. C. H. Flurscheim has been appointed Chief Electrical Engineer of the Metropolitan-Vickers Electrical Co. Ltd. Mr. Flurscheim succeeds Mr. H. West, who will thus be enabled to devote more of his time to the affairs of A.E.I.-John Thompson Nuclear Energy Co. Ltd., of which he is Managing Director. Mr. West will retain his seat on the board of the Metropolitan-Vickers Electrical Co. Ltd.

NEW EQUIPMENT AND PROCESSES

Cab Ventilating Fan

AN electric fan, special prototypes of which were fitted to the driving cabs of the Toronto Subway multiple-unit stock for demisting purposes, and suitable for



diesel and electric cab ventilation applications, has recently been placed on the market. The fan, which operates from the battery system, is silent running.

The motor rotates the 6-in. diameter black rubber blades, and is totally enclosed and mounted on a backplate by means of a ball and knuckle joint which provides a means of controlling the direction of air flow. Connection to the electric supply is made by means of 18 in. of Dumet 4-twin cable, which is supplied already fitted to the fan motor. The motor

body and backplate are finished in white enamel; the ball and knuckle joint is chromium-plated. The fan has a speed of 2,500 r.p.m. and is suitable for 6, 12, 24-V. d.c. operation. It is rated at 14 W. and weighs 1 lb. 8 oz.

The price of the fan is £7 13s. and is available ex stock. The manufacturer is the General Electric Co. Ltd., W.C.2.

Diesel Generating Sets

THE first range of diesel-engined generating sets in which Newage/B.M.C. diesels are coupled with the Stamford alternator, are suitable for standby sets for electric signalling and telephone systems, and, with certain modifications, for adaptation as power units for refrigerator wagons. The 4-cyl. engines are of three sizes, 2.2, 3.4, and 5.1 litres, the outputs being 10-12 kW., 15-20 kW., and 30 kW., 50 cycles, at 1,500 r.p.m., and 14 kW., 24 kW., and 34 kW., 60 cycles, at 1,800 r.p.m. respectively.

The engines, stated to be economical on fuel and requiring the minimum maintenance, are built as self-contained units with radiator and radiator cowl supported from the front of the engine, rigid front and rear supports between engine and baseplate, and a heavy industrial flywheel. The rigid baseframe is built with an integral fuel tank incorporating a dial-type contents gauge.

The Stamford self-regulating, self-exciting alternator is driven through a flexible coupling. Auto-control gear is mounted in the end compartment of the alternator, and is cooled by the incoming air. A control panel which includes all necessary meters, main switch and fuse protection is flexibly mounted on top of the alternator casing.

The price of these generating units range between £517 and £754. Delivery is

on a 10 weeks basis at present. The manufacturer is Newage (Manchester) Limited, 6, Carlos Place, Grosvenor Square, W.1.

Automatic Tea Machine

AN automatic coin-operated tea dispenser, the Tea Cub, is now available in this country. Railway applications for this machine include assisting normal buffet facilities to deal with large crowds as at holidays, at stations where no normal refreshment facilities exist, and in workshops where beverages are required to be served at some distance from a canteen. The operating time is 5 sec. A cup of hot tea mixed with fresh milk is delivered



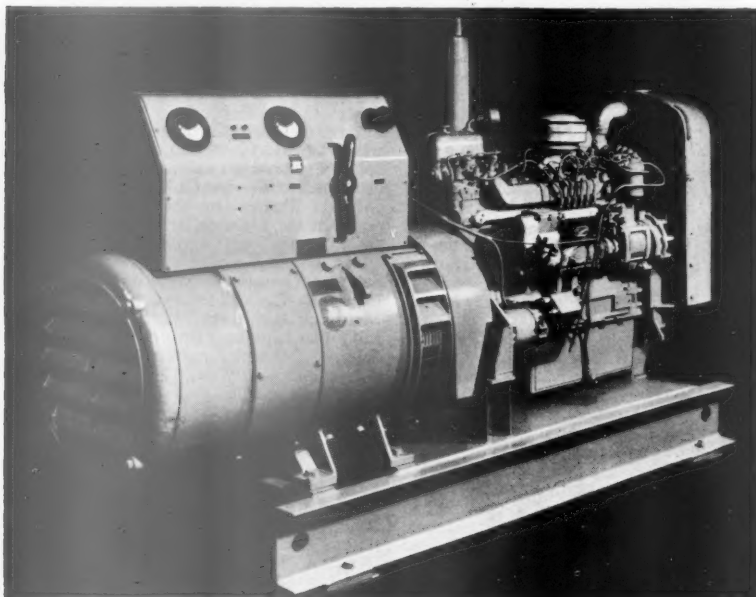
in throw-away cups upon dropping the coin into a slot. Alternative slots indicate sweetened or unsweetened tea.

Complete freshness of ingredients is achieved by deep-freezing the tea at the time of brewing. The capacity of the dispenser is 150 cups and overall it measures 3 ft. 9½ in. high, 1 ft. 4 in. wide, and 1 ft. 8½ in. deep (front to back). With the cup turret it stands 6 ft. high. The machine operates from normal domestic a.c. voltages.

The price is £350. The delivery will be quoted on application to the manufacturer, W. M. Still & Sons Ltd., 29-31, Greville Street, E.C.1.

Bright Decorative Alloy

RECENTLY developed to replace chromium-plated brass and steel, an aluminium alloy which contains 1½ per cent magnesium and combines the high finish of polished aluminium, with greater hardness and strength, will be known as Noral D 57 S. This alloy is suitable for decorative ware, for mouldings and small components for rolling stock interiors such as light reflectors. The finish obtainable



is very similar to chromium plating but with a higher reflectivity of approximately 20 per cent. Cost saving compared to chromium-plated brass components is around 25 per cent. Particular advantage of the alloy is that damage to the film, which is very hard, does not result in discoloration. Noral D 57 S is available in the form of sheet, strip and extruded sections and a number of brightening processes may be used to treat the polished surface.

Price and supply details are available from the manufacturer, the Northern Aluminium Co. Ltd., Banbury, Oxon.

Hydraulic Lifting Truck

THE new model in the range of Jacacaddy hydraulic-lift elevating trucks, the JT.ID, is useful for loading and off-loading wagons from the track side, stacking inside a wagon, and similar operations. The



height of lift is 5 ft. 2 in., with a load capacity of 6 cwt. One man can raise and transport a load over comparatively rough flooring with the truck which has a three-point suspension.

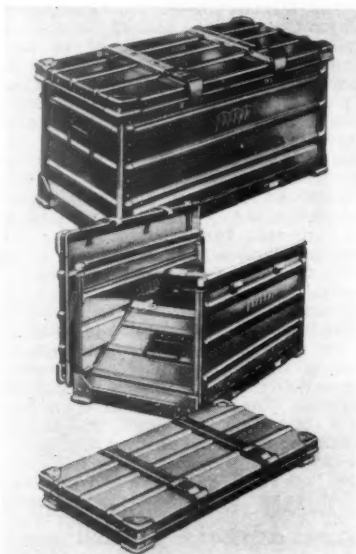
The platform of the JT.ID is interchangeable with a fork and jib attachment, allowing a wide range of applications. The platform of the truck lowers to $\frac{1}{4}$ in. from the floor which makes for easy loading and the load can be brought, by means of a hydraulic lift, normally lever-operated, to the point of balance which makes a light pull-over for wheeling and leaves the load properly distributed over the wheels and castor. On arrival, the truck is tipped forward and the load can then be raised or lowered by the ram to the required height for its removal.

The bottom frame is fitted with rollers which allow for manoeuvring the load into the final position. Accessories which are available for special loads include a back rest for sacks, a cradle to stabilise drums, and a longer platform. The standard size of the platform is 21 in. wide \times 18 in. long, the truck being 26 in. wide \times 6 ft. overall height. This model is also available with a power lift, battery or mains operated electric motor-driven rotary pump, to obviate hand operation, if required.

The price of the model JT.ID truck is available on application. Delivery is two weeks. The distributor in the U.K. is G. Hunter (London), Limited, 80, Fenchurch Street, E.C.3.

Collapsible Alloy Containers

THE Tracon non-expendable metal containers that are collapsible, pilfer proof and non-corrodible, are now available for the railway transit of many types



of goods, including fruit, perishable merchandise and livestock. Lightweight cardboard or wooden shelves can be fitted into the containers if required, which may also be supplied with holes in the sides.

Tracon containers are made of specially toughened aluminium alloy, with hardened steel corners to withstand rough handling. Space is saved on the return journey, because five collapsed containers can be stored in the space required by one wooden container of comparable size, and although collapsible, Tracons are in one piece, which precludes the possibility of any part of the containers being mislaid.

The assembly of the container for packing by raising the sides and lowering the retaining clips, takes, it is stated, about 10 secs. The illustration shows a container assembled, partly collapsed, and packed flat. When the container is packed the lid clips shut and can be locked or sealed against pilfering. A hand-grip is fitted to each end plate for handling. The life of a Tracon is expected to be at least six to eight years of constant service. Four sizes of containers are available, at present, having capacities of 2, $4\frac{1}{2}$, 9 and $16\frac{1}{2}$ cu. ft. the tare weight being 14, 30, 55, 62 lb. respectively.

Tracons may be hired or purchased outright. The manufacturer is Light Alloy Construction Limited, Mowden Hall, Darlington. Details of price and hiring charges are available on application to Tracons Limited, 5A Dean's Yard, Westminster, S.W.1, a company formed for the hiring of containers.

Small Conduit Bender

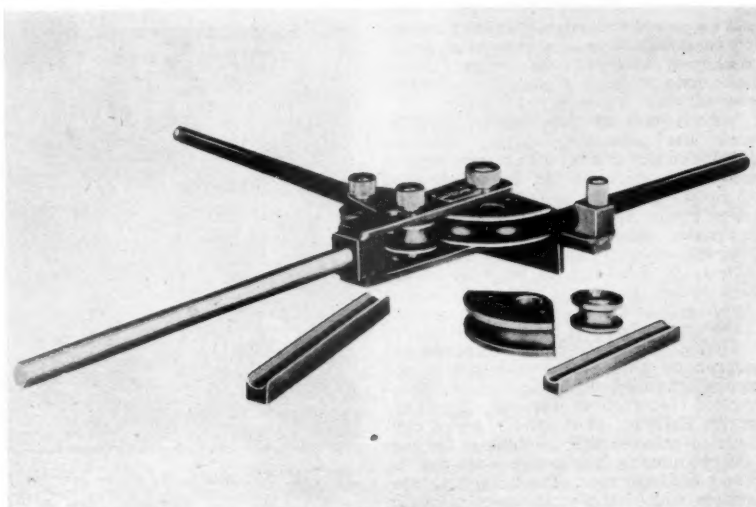
A PORTABLE bending machine has been developed which can be carried in a tool bag. It has been produced primarily for bending conduit tubes of $\frac{1}{2}$ in. and $\frac{3}{4}$ in. dia., used for electrical wiring applications on railway locomotives, rolling-stock and buildings, and can be fixed to a bench or bolted to the leg of a standard tripod vice. The G.E.C. C.7297 vice has been modified to accommodate the bender.

The Midget, as it is known, can, by using a smaller former supplied as an extra, bend conduit to a centre line radius of 2 in.

This is claimed to be an advance over conventional benders. This enables tubes to be "nested" inside each other where space is important and a close radius bend is essential.

The bending action is assisted by an advance pressure roller in addition to the usual guide roller, which reduces manual effort. The tool will also bend heavy and light gauge copper and steel tubing. For bending heavy tubing the guide bar is replaced by a guide roller and the pressure roller is positioned according to the diameter of the tube being bent. The Midget weighs with two formers $11\frac{1}{2}$ lb.

The price of the Midget is £9 10s. 4d., and delivery can be made from stock. The tool is marketed by the General Electric Co. Ltd., W.C.2.



L.M.R. Commercial Teleprinter Network Inaugurated

The first teleprinter network for commercial purposes on British Railways was introduced on February 11, in the London Midland Region. Designed to give immediate contact between the Chief Commercial Manager of the Region, District Goods Managers and important goods stations in the Region, the installation is of particular importance in the transmission of rates quotations, tracing missing goods, advices of special transits, and for expediting instructions.

The network was opened for service by Mr. David Blee, General Manager of the London Midland Region, who sent a goodwill message to the districts from Euston, and within a few minutes had received replies from the four District Goods Managers linked by teleprinter at Broad Street (London), Liverpool, Birmingham, and Manchester and on behalf of the 20 goods stations linked by Desk Fax equipment with those District Managers. Replies were also received from the other District Goods Managers at Bolton, Warrington, Wolverhampton, and Chester, who are connected with the teleprinter network by means of Desk Fax machines, but who will be connected later by teleprinter, as will also the District Managers and principal goods stations in the Stoke, Derby, Leicester, Carlisle and Barrow districts. This network will then embrace the whole of the London Midland Region. Although confined to goods traffic for the present, it is the intention of the London Midland Region to bring the teleprinter service into use for passenger traffic.

To put the system into operation a message is typed on to a Creed teleprinter machine at Headquarters or in the District Goods Manager's offices and is transmitted to the relay point at Birmingham where it is relayed by automatic transmitter to the District Manager concerned, and thence if necessary to his important goods stations by means of Desk Fax equipment. Desk Fax machines supplied by Creed & Co. Ltd. provide for a communication, written or typed, to be wrapped round the machine's transmitting drum. A button is pressed and the message is reproduced at the point for which it is intended.

Crompton Parkinson Limited in 1956

With regard to business, difficult operating conditions were met and mainly overcome, and Crompton Parkinson Limited were able to report another successful year.

With regard to the traction division, work was proceeding during 1956 on diesel/electric orders which represent a substantial share of the business placed by British Railways under their modernisation plan. Apart from various auxiliary equipment, the Company will supply the complete electrical equipment for 20 locomotives of 1,160-h.p. to be built by the Birmingham Railway Carriage & Wagon Company, and for 10 locomotives of 2,300-h.p., to be built by British Railways at Derby. The 1,160-h.p. locomotives will incorporate some features found in the equipment supplied for the fleet of Sulzer-engined locomotives for the Commonwealth Railways of Australia, which continue to enhance their reputation for economical running. The engine is again of the Sulzer 6LDA28 type. The 2,300-h.p. locomotives will be the most powerful put in

hand amongst the current group of British Railway orders, and also the most powerful yet to be constructed in British Railway workshops. A special generator design has been evolved, with a continuous output of 1,531-kW. which is greater than any traction generator previously constructed in Europe. It is coupled to a 12-cylinder double-crankshaft engine. Sulzer Bros. (London) Ltd. are the contractors for the engine and the transmission equipment.

Electrical Equipment

During the year, the Company delivered to the Birmingham Railway Carriage & Wagon Company the bulk of the electrical equipment for a contract of 13 locomotives ordered by the Crown Agents for mixed traffic duties on the Gold Coast Railways. The year also saw the completion of a repeat order for 136 traction motors together with ancillary equipment, motor generator sets and batteries, to equip an additional 34 motor coaches for the Toronto Rapid Transit Subway. The 68-h.p. motors are identical to those supplied by Crompton Parkinson for the original 104 cars, and are of cylindrical frame, bogie-mounted type, driving through a cardan shaft to a right-angle gearbox. Subsequent to the order being placed for these motors, it was decided to equip six of the 34 new cars for rheostatic braking, and a further 24 suitable cylindrical-frame motors are being provided for this purpose. These motors will be mechanically interchangeable with the traction motors of the air-braked cars.

E.A.R. & H. Joint Staff Advisory Council

The inaugural meeting of the All-Line Joint Staff Advisory Council of the East African Railways & Harbours Administration was held in Nairobi on January 29. This newly created body is multi-racial and has been formed to provide a high-level instrument of negotiation and consultation between the Staff Association/unions and the management.

Amongst the matters the council is empowered to deal with are general principles governing salaries, conditions of service, recruitment, hours of duty, promotion, housing, leave and pensions. Meetings are to be held in January and July of each year, or more frequently on request from either side.

The Chairman, Mr. W. Urquhart, Deputy General Manager, in welcoming the members to the first meeting, said he looked forward to the fullest possible use being made of the new machinery and hoped that the council's deliberations would be conducted in an atmosphere of goodwill and mutual understanding.

Those present, shown in the accompanying illustration, included:—

Seated: Mr. W. Urquhart (third from left); *Middle row:* Messrs. R. W. Osgathorp, Industrial Relations Officer (on left); J. Hudson, Chief Mechanical Engineer (second from left); C. T. Hutson, Chief Commercial Superintendent (on right);

Back row: Messrs. C. T. Henfrey, Chief Engineer (on left); J. H. Collier-Wright, Chief Establishment Officer (second from left); J. T. Ferguson, Assistant Chief Accountant (fourth from left).

York Goods Station Modernised

Modernisation at York Goods Station is now complete. The station serves the city of York for all classes of traffic, and collects and delivers smalls traffic within a radius of approximately 10 miles. Smalls to the extent of over 400 tons a day are handled between rail wagons and road vehicles and between incoming and outgoing railway wagons. This was previously dealt with by hand barrows carrying an average load of 1½ cwt. The manual system of handling has now been replaced by Scott electric fork lift trucks, with shortened masts, each having a lifting capacity of 13 cwt., used in conjunction with 100 semi-live stillages and 20 tug-bar handles. The stillages have steel mesh platforms measuring 40 in. x 48 in. with two short feet at the dead end and two small wheels at the live end. They are picked up bodily and moved about as required by the electric trucks, or when more convenient for very short distance movements, the stillages can be moved manually by using the tug-bar handles.

Mobile Crane

A 20-cwt. mobile crane has been provided together with a crane arm attachment which can be used on any of the fork lift trucks for handling individual heavy packages. It has been necessary to strengthen the station platforms to accommodate this new equipment. Inwards traffic for delivery or for transhipment is discharged from the incoming railway



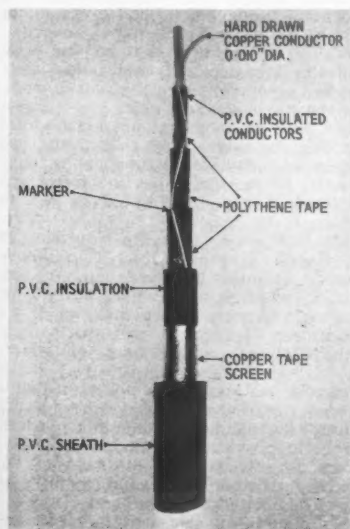
Mr. W. Urquhart and other officers of East African Railways, and delegates, at the All-Line Joint Staff Advisory Council in Nairobi

wagons on to the stillages and these, when loaded, are moved by the electric trucks and deposited adjacent to the road vehicles, in the case of traffic for delivery, or adjacent to the outgoing railway wagons, in the case of transshipment traffic. Outward traffic collected for despatch by rail is unloaded from the incoming road vehicles on to stillages which are conveyed to the outgoing railway wagons in exactly the same way. The average length of haul between rail wagon and motor vehicle is 80 yd. and the mechanised handling achieves considerable labour saving. The electric trucks are easy to operate and the staff respond quickly to tuition.

To meet the increased demand for storage space, there is a modern warehouse of 880 sq. yd., available for storage of traders' traffic. Here palletisation has been introduced and a fork lift truck of 1-ton capacity with 500 wooden pallets is in use for the stacking of the various commodities to be stored. Full wagon load traffic is dealt with in the goods yards, and containers and other heavy lifts are handled by two mobile cranes, one of 3-ton capacity and one of 6-ton capacity. Collection and delivery of traffic is by modern articulated road vehicles.

Signalling on London Transport Circle Line

In the article in our issue of February 1 describing the new remote control signalling on the Circle Line of London Transport between Farringdon and Liverpool Street, reference was made to the special thin wire cable now being used for the



Detail of thin wire cable for control and indication circuits

control and indication circuits. The accompanying photograph illustrates the manner in which this is formed and the various component layers, etc. The cable for the Farringdon installation, some 1,865 yd. long, was provided by the Telegraph Construction & Maintenance Co. Ltd.

The remaining cables, wiring in the signalbox, and so on, were supplied by British Insulated & Callender's Cables

Limited and the Concordia Electric Wire & Cable Co. Ltd.

The Westinghouse Brake & Signal Co. Ltd. supplied the main and auxiliary control desks for the control room in the signalbox and all the safety circuit signalling relays.

Relays used in non-safety circuits, which were fitted into nitrogen-filled cases by the Signal Engineer's staff, were obtained from Ericsson Telephones Limited.

The train describers, already working but modified to suit the altered conditions created by the introduction of the remote control, were manufactured by the Siemens & General Electric Railway Signal Co. Ltd.

Westinghouse Brake & Signal Co. Ltd.

The annual meeting of the Westinghouse Brake & Signal Co. Ltd. was held in London on February 11. In his statement, Captain A. R. S. Nutting, the Chairman, states that the demand for Westinghouse products of all kinds, including air brakes and vacuum brakes for railway rolling stock, signalling of all types, rectifiers and rectifier equipments, and so on, increased materially during 1956 not only for the home market but also for overseas markets.

Brake Division

The brake division is responsible for air and vacuum brakes and heating for railway rolling stock. British Railways have, during 1956, placed large orders for all these types of apparatus, and the orders received from overseas markets have been very heavy.

Substantial orders for vacuum brake cylinders for freight wagons for British Railways have been received, and the manufacture of these cylinders is being carried out at the parent company's Chippenham factory and at the plants of Gresham & Craven Limited and other subsidiary companies.

Signalling

The British Railways modernisation programme has, so far as signalling is concerned, made great progress during 1956. Westinghouse staff signalling engineers have been most successful in designing and developing new signalling equipment necessitated by the adoption by British Railways of 25,000 V., 50 cycles, as the basis for electrification. Also great technical progress has been made by the company in the field of automatic control of marshalling yards, and substantial orders are held for this equipment.

During 1956 the company completed, for the Scottish Region, the large electro-pneumatic signalling installation at Cowairs, and the new signalling arrangements at Thornton. The contract for power signalling for Glasgow Central Station has been received, which is, he believes, the largest single signalling contract ever placed by British Railways for power signalling.

The orders from overseas markets for signalling have reached a very large total in value, and many of the contracts placed are of great importance from the transport angle in the countries concerned. Westinghouse signalling engineers are supervising at present important installations in five overseas countries. A large centralised traffic control panel, with its associated wayside equipment, has been supplied to Rhodesia.

In the United Kingdom, the largest subsidiary is Gresham, Craven & Healy (Holdings) Limited, which owns the share capital of the manufacturing concern, Gresham & Craven Limited. The main product of Gresham & Craven Limited is the vacuum brake, which the company is able to produce in large quantities, capable of being still further increased as soon as the new factory at Worsley comes into operation this year. The company's order book is most satisfactory.

Railways throughout the world still require mechanical signalling, and the Railway Signal Co. Ltd. of Liverpool is well experienced in this particular field. Its order book provides an adequate demand upon its productive capacity.

The W. R. Sykes Interlocking Signal Co. Ltd. of Clapham and Peckham is concentrating on electronics. It manufactures rectifier equipments, mechanical devices for locomotives, signalling, and does a good deal of sub-contracting from the parent company.

Westinghouse Garrard Ticket Machines Limited has the machines which carry out the basic principle underlying mechanisation of ticket offices, that is to say, these machines print the tickets at the point of sale and simultaneously record and account for the tickets sold. The company's Rapid and Mini Printers are familiar to all users of the London transport system. The latest types of Multi Printers and Flexi Printers, used extensively on the Continent of Europe, will soon be familiar to travellers on British Railways. The company's parcel stamp machines now in use on British Railways have proved themselves satisfactory.

The Westinghouse Brake & Signal Co. (S.A.) Pty. Ltd. will have a busy year and will justify its formation by participation in the carrying out of the large and important signalling contracts held by the company in the Union, the Rhodesias and elsewhere.

Prospects for Current Year

The parent company and several of its subsidiaries have already received orders of some magnitude in connection with the modernisation and re-equipment plan of British Railways. As a number of the company's brake and signalling engineers have participated for many years in the contract work for British Railways, these orders from British Railways are of particular interest and pleasure to them. The fact that the export order books, which have always been a mainstay, continue to rise is of importance not only to the company but also to the national economy.

The report and accounts were unanimously adopted, a resolution increasing the capital was approved, and the other formal business was duly transacted.

Staff and Labour Matters

T.S.S.A. Claim

A meeting of the Railway Staff Joint Council took place on February 6 in connection with the claim of the T.S.S.A. for improved rates of pay for railway salaried staff. No agreement was reached and the Association indicated that it desired to refer the claim to the next stage in the Negotiating Machinery, the Railway Staff National Council.

N.U.R. Wage Claim

The claim of the N.U.R. for an increase of 10 per cent in the rates of pay of salaried and conciliation staff employed

on British Railways has been referred to the Railway Staff National Tribunal which will hear the claim on February 25, 26, and 27. The Chairman of the Tribunal is Sir John Forster.

Parliamentary Notes

Transport (Railway Finances) Bill

The Transport (Railway Finances) Bill was debated on Second Reading in the House of Lords on February 7.

Lord Mancroft, Parliamentary Secretary, Ministry of Defence, reviewed the financial provisions of the Bill, which he summed up as being complicated. "This is inevitable," he commented, "if we are to enable the Commission to tackle its problems as it should do, and as it earnestly wants to do, on a sound commercial basis, and also to preserve a proper sense of financial discipline within its undertaking." He believed that, with all their faults, British Railways were, on the whole, providing a much better service to the community than the community was always prepared to admit—and that despite appalling difficulties, few of which were of their own making.

For reasons largely outside their control, British Railways had fallen sadly behind the times, particularly in the matter of equipment. It seemed to him, however, that most of the men and women working on the railways were doing everything in their power to put matters to rights. It did not, however, rest wholly in their power. Hence this Bill.

Lord Lucas of Chilworth thought Lord Mancroft possibly over-optimistic. The truth was that he was asking the House to pass a Bill which would underwrite the losses of British Railways to the tune of £320 million—£70 million up to date and £250 million in the next six years, when it was hoped that the B.T.C. was going to enter a balance and start to make a profit.

Lord Lucas criticised the services provided. A live, dynamic, commercial instinct was needed within the railways. Why was it that though there was an industry with a turnover of £700 million a year, employing 800,000, the top executives were the worst paid in this country? He wanted to say to the railways and to the trade unions: "You have to bring a new thought into this matter." The only people who had any incentive were the porters.

Lord Hurcomb said that the scheme, as a device for financing the deficiencies for the next few years, was well devised. Indeed, he thought its authors were to be congratulated upon its ingenuity. It lifted from the shoulders of the Commission the incubus of having to show a heavy working loss on its business in its annual accounts. It would make it more difficult for the critics in so many quarters, who were always anxious to denigrate the management of our nationalised public utilities, to throw stones at the Commission and say, "You are making a heavy loss." They generally also said, "You are making it also at the expense of the taxpayer"—which, of course, was not really correct and never was.

More important than that, perhaps, the removal of this incubus should be "good for the morale both of the management and of the men all down the line," added Lord Hurcomb. "It seems to me that the Commission is entitled to expect more than ever from every member of its staff, individually and collectively, through the elaborate machinery of consultation

which has been established, united and enlightened acceptance of changing technical conditions; and on that many financial consequences may depend."

Lord Hurcomb asked whether it was not time something more was said about the capital liabilities of London Transport? It ought not to be left out of account in considering the future requirements of the economy as a whole. In particular, there were two or three items of London Transport's undertaking which seemed to him to call for some early treatment. How long were North and North-East London to wait for the new tube?

Lord Monkswell said the two promises that stood out above everything else were the improved goods traffic and the super-session of the steam locomotive. The former was so technical and so controversial that he could not express any opinion on it. The latter would be responsible for quite half the total proposed expenditure, and the advantages were of the most doubtful and shadowy kind.

Lord Burden asked those in charge of the business of quoting special rates to allow greater discretion to each district agent. The lowest possible figure should be given to the railway representative, and he should be allowed discretion as to how he handled that figure. As to the salaries of top executives, Lord Lucas was Parliamentary Secretary to the Ministry of Transport when the railways were brought under nationalisation, and he would have had some say in the rates fixed.

Lord Burden suggested that, at the appropriate moment, not too far ahead, there ought to be an inquiry into the financial structure of the industry, and also an inquiry into what services were provided by the railways for strategic reasons and maintained at a loss, and whether other services which are rendered to the Government were adequately paid for.

"I would like to suggest," went on Lord Burden, "that in the next five years an attempt be made to bring a new spirit into the railway industry." The three great trade unions in the railway service should have a far wider and more responsible position, and should not simply regard it as their job every year to submit a claim for improved wages and salaries. . . . Every railwayman should be a publicity officer for his industry.

Lord Mancroft welcomed Lord Burden's suggestions, and he was sure that Sir Brian Robertson would be the first to express the wish that the dynamic leadership which he was seeking to give to the railways should be more closely followed by some of his subordinates.

The Bill was read a second time and committed to a Committee of the whole House.

Questions in Parliament

Division of Coal to Rail

Sir William Anstruther-Gray (Berwickshire & E. Lothian—U.) asked the Minister of Transport & Civil Aviation on February 6 what further steps he was taking to divert the transport of coal from road to rail, in view of the fact that the then figure of 64,000 tons diverted weekly was still below what could be reasonably achieved.

Mr. Harold Watkinson said in accordance with his instructions, Regional Transport Commissioners were being very strict in issuing supplementary rations of motor fuel for road movement of coal,

especially over long distances, unless they were satisfied that the coal could not reasonably be moved by another form of transport. Later, he said: I think the target figure which we ought to try to achieve is much more like 250,000 tons. I am in close touch with the Commission and the Minister of Power to see whether we can get a better figure.

B.T.C. Pensions

Mr. Thomas Brown (Ince—Lab.) asked the Minister of Transport & Civil Aviation on January 30 if he was now in a position to say whether he had approved the scheme, submitted to him as far back as November, 1956, by the B.T.C., which dealt with increase in pensions of those transferred to the Commission on vesting day.

Mr. Harold Watkinson, in a written reply: No such scheme was submitted to me in November, 1956, or subsequently. As I informed the House on March 28, 1956, the B.T.C. introduced from April 1 a further scheme of supplements for superannuitants. This scheme did not require my approval.

Staff Co-operation in Modernisation

Mr. G. R. Strauss (Vauxhall—Lab.) asked the Minister of Transport & Civil Aviation in the House of Commons on February 6 whether he would make a statement about the co-operation he was getting and expected from the staff of British Railways in carrying out the modernisation plan.

Mr. Harold Watkinson said he did not think that he needed to add anything to what he said on the Third Reading of the Transport (Railway Finances) Bill, when he referred to the importance of continuing co-operation between management and men if the modernisation plan was to succeed, and to the very great support which the trade unions had given to the British Railways Productivity Council.

Mr. Strauss recalled that on that occasion the Minister said that unless there was full co-operation by the staff in working the modernisation plan, the railways might have to be pulled up and disposed of. Was he aware that that threat had caused considerable resentment in many quarters of the staff? As the threat was nonsense in any case, would he like to withdraw it?

Mr. Watkinson: No. On November 20 the British Transport Joint Consultative Council said that the trade unions, and, indeed, the whole of the staff, pledged the maximum support to see that the affairs of British Transport, and particularly British Railways, are put on a sound footing. I wish them well in that task, but it is my duty as Minister to point out that it has to be carried out if they are to justify the very large sums of public money which are being provided for modernisation.

Mr. Strauss said he was asking the Minister whether he would qualify or completely withdraw his threat.

Mr. Watkinson said that quite an improper gloss was being placed on what he said. The railways needed the co-operation and support—and he thought it would be forthcoming—of all who worked for them, if they were to succeed. If they did not get that co-operation the whole thing would go bankrupt, and would have to be disposed of in some way or another. He did not withdraw that statement at all. Later, he stated that he thought this was a job for everybody on the railways, and nobody wanted them to succeed more than he did. He only hoped that they would be allowed to press on and get on with the job.

Contracts and Tenders

S. A. Alsthom has received from the Algerian Railways an order for seven 3,000-V. d.c. electric locomotives of Co-Co wheel arrangement for the Bone-Tebessa line.

M.A.N. has received an order for 16 triple-car electric trains for the Athens-Piraeus line. These are to have Athermos-type axleboxes made by Knorr.

S.A. La Brugeoise et Nivelles is building at its Nivelles works 3,000 all-welded steel wagon underframes for Coras Iom-pair Eireann. The same works has just completed for the same customer 86 welded steel underframes for bogie passenger coaches.

Robert Hyde & Son Ltd. has received an order from the Eastern and North Eastern Regions of British Railways for 4,620 Athermos plain-bearing centrifugally-lubricated axleboxes for the new 25½-ton two-axle hopper wagons now being built at the Shildon works of British Railways for delivery this year. Robert Hyde & Son Ltd. has also received, from the British Transport Commission, a further order for 15,000 Athermos axleboxes of similar type, for other wagons under construction, for delivery in 1958.

British Railways, Scottish Region, have placed the following contracts:—

Westinghouse Brake & Signal Co. Ltd., London: provision of colour light signalling apparatus, main and stand-by electricity supplies, and compressed air services, Glasgow Central High Level

Metropolitan-Vickers-GRS Limited, London: provision of main line colour light signalling apparatus and relay interlocking control panel, Millerhill marshalling yard, Edinburgh

Siemens & General Electric Railway Signal Co. Ltd., Wembley, London: provision of colour light signalling, relay interlocking control panel, main and stand-by electricity supplies and compressed air services, Perth

Westinghouse Brake & Signal Co. Ltd., London: provision of electricity supplies, compressed air services, also retarders and hump yard equipment, new marshalling yard, Perth

James White (Contractors) Limited, Edinburgh: earthworks, fencing services, turntable foundations and under-bridge, new marshalling yard, Perth

The Churchill Machine Tool Co. Ltd., Manchester: provision of internal grinding machine, and double vertical grinding machine, St. Rollox Works, Glasgow

Thos. Robinson & Son Ltd., Rochdale: provision of incising and boring machines, Greenhill creosoting depot, Bonnybridge

Paterson, Hughes Engineering Co. Ltd., Glasgow: provision of two overhead electric travelling cranes, Townmill Junction wagon repair depot

George Cohen, Sons & Co. Ltd., Glasgow: provision of two road mobile cranes, Civil Engineer's Department, Scottish Region

Matisa Equipment Limited, London: provision of track recording trolley, Scottish Region.

The Director General of the India Store Department invites tenders for the supply

of tyres (C & W) 2 ft. 4½ in. on tread (MG) to rolled size. See Official Notices on page 208.

The Special Register Information Service, Export Services Branch, Board of Trade, has received a call from India for smokebox plates and tubes, as follows:—

12 plates flanged smokebox tubes steel for YC and YD class locos., fig. J of drg. No. E/SL 203/14 (D.G.I. & S. No. 1551) and I.R.S.S. No. R 21/42 (E.A.I./345/MG), Controller of Stores, Southern Rly., Madras, indent No. S/237/1/EAI-345/AD/46 dated 28.9.56 D.G.S. & D. No. 18852-G)

14 plates, flanged, firebox, back, outside steel, for W.P. boilers, drg. No. E/SL 126/23, modn. (DGS & D No. 6218/3). Fig. H & I.R.S.S. No. R-21/42 (EAI 572/B/BG), Controller of Stores, Southern Rly., Madras, indent No. S/237/1/EAI/572/B/BG/AD/45 dated 28.9.56 (D.G.S. & D. No. 18851-G)

The issuing authority is the Director-General of Supplies & Disposals. The tender No. is P/SW2/18852-G/IV.

Bids should be sent to the Director-General of Supplies & Disposals, Shahjahan Road, New Delhi. The closing date is February 21, 1957. A set of tender documents, including drawings, is available for loan to United Kingdom firms on application to the Branch (Lacon House, Theobalds Road, W.C.1). The reference ESB/2966/57 should be quoted in any correspondence with the Branch.

The Special Register Information Service, Export Services Branch, Board of Trade, has received a call from India for boiler tubes, as follows:—

456 steel tubes 11 ft. 8 in. × 2 in. o/s dia. 11 SWG thick to SMW's sketch No. EBR.99A (DGS&D No. 12954) item—C and to IRS. specn. No. R-22/56 (Class EAI).

The issuing authority is the Director General of Supplies and Disposals. The tender No. is P/SW2/19606-G/IV. Bids should be sent to the Director General of Supplies & Disposals, Shahjahan Road, New Delhi. The closing date is February 22, 1957. A set of tender documents (including drawing EBR.99A) is available for loan to United Kingdom firms on application to the Branch (Lacon House, Theobalds Road, W.C.1). The reference ESB/2961/57 should be quoted in any correspondence with the branch.

The Special Register Information Service, Export Services Branch, Board of Trade, has received a call from India for tie bars as follows:—

20,000 tie bars, M.S. B.G. for 90, 80, 76 & 75 lb. B.H. rails. Ex-M. & S.M. Rly. drg. No. 6178-L/14-F (I.S.D. No. 14436) & I.R.S.S. No. T8/50.

The issuing authority is the Director General of Supplies and Disposals. The tender No. is P/SR2/19593-G/II. Bids should be sent to the Director General of Supplies & Disposals, Shahjahan Road, New Delhi. The closing date is March 1, 1957. A set of tender documents, including drawings, is available for loan to United Kingdom firms on application to the Branch (Lacon House, Theobalds Road, W.C.1). The attention of United Kingdom firms is drawn to a booklet issued by the Government of India entitled "Conditions of Contract Governing Department of Supply Contracts," a

copy of which is available for inspection at the Branch. The reference E.S.B. 2962/57 should be quoted in any correspondence with the branch.

The Director General of Supplies & Disposals, New Delhi, invites tenders for axleguards as follows:—

500 axleguards only without stays for 7-in. × 3½-in. jnl. for wagon (M.G.) to CME O.T. Rly. drg. No. WC 156 and to IRSS No. R-6/54, material as shown on drg. (EB2/P-177)

530 axleguards only without stays for 7-in. × 4-in. jnl. for wagons (M.G.) to OC's drg. No. 1704/7 (DGS&D. No. 9062), material as shown on drg. and to IRSS No. R-6/54 (EB2/P-250).

Delivery is required immediately. Tenderers should give the earliest date of delivery that they guarantee to adhere. The address to which tenders should be sent is the Director General, Supplies & Disposals (Section SRI), Shahjahan Road, New Delhi, quoting reference No. P/SRI/17146-E/1/RP. The closing date is February 15, 1957.

Forms of tender are only available for purchase in India from: Deputy Director General (Supplies), Directorate General of Supplies & Disposals, New Delhi; Director of Supplies & Disposals, Bombay or Calcutta; Deputy Director of Supplies & Disposals, Madras. If the date for the receipt of tenders does not allow sufficient time for tenderers to obtain tender forms from India, they may submit their quotation to India in their own letter form or by telegram provided always that all essential particulars are given and further provided they simultaneously apply for the tender forms and return them duly completed as soon as possible on the basis of advance quotations already submitted. A copy of the tender form can be examined at the India Store Department, Government Building, Bromyard Avenue, Acton, London, W.3, on application to the "CDN" Branch quoting reference No. S2858/1956/Rly./BN. and the drawing can be seen at the office of Hodges Bennett & Company, 59/60, Petty France, Westminster, London, S.W.1, from whom copies may be obtained, if required, at a fixed price per sheet.

The Special Register Information Service, Export Services Branch, Board of Trade, has received a call from India for superheater elements as follows:—

150 superheater element tubes (trifurcated type) (4th row), M/S and HPS 2, class to drg. No. 12703/56, alt. nil (D.G.S. & D. No. 12448 reference) and I.R.S. specn. No. R 32/54 and R 23/51 (EAI/SX 2065)

The issuing authority is the Director-General of Supplies and Disposals. The tender No. is P/SW2/18872-G/I. Bids should be sent to the Director-General of Supplies & Disposals, Shahjahan Road, New Delhi. The closing date is March 7, 1957. A set of tender documents is available for loan to United Kingdom firms on application to the Branch (Lacon House, Theobalds Road, W.C.1). The reference ESB/3275/57 should be quoted in any correspondence with the Branch.

The Special Register Information Service, Export Services Branch, Board of Trade, reports that the closing date of the call from South Africa for automatic couplers and spares, reported on page 173 of our issue of February 8, has been extended to March 15, 1957.

Notes and News

Vacancy for Permanent Way Inspector.—Applications are invited for the post of permanent way inspector, between 35 and 40 years of age, required by mining company in West Africa for privately owned railway. See Official Notices on page 208.

Vacancies for Engineers and Draughtsmen.—Applications are invited for posts of engineers and draughtsmen, civil engineering, with experience of railway work, required by consulting engineers in Westminster. See Official Notices on page 208.

Senior Representative Required.—A senior representative is required in the London area for a company engaged in the production of forged steel products for railways, the motor trade, aircraft and general engineering. See Official Notices on page 208.

Argentine Purchasing Mission in London.—Officials of the Argentine Ministry of Transport, who, as mentioned editorially in our issue of December 28, 1956, are in London to investigate the possibility of buying some £5,000,000 worth of railway equipment in this country, have established an office at 171, Victoria Street, London, S.W.1.

South Wales Express in New Colours.—The "Pembroke Coast Express" of the Western Region is now formed of coaches in chocolate-and-cream, the colours of the former G.W.R. This train leaves Paddington at 10.55 a.m. and returns from Pembroke Dock at 1.5 p.m. each weekday, and shares the distinction of bearing this livery on the South Wales route with the "Red Dragon Express." The reversion of named trains in the Western Region to these G.W.R. colours was the subject of editorial comment in our issue of June 15, 1956.

Luncheon to Mr. Stanley Dixon.—The Public Service Vehicle Advertising Committee entertained to lunch on February 5, at the English Speaking Union headquarters, Mr. Stanley Dixon, on his retirement from the Advertising Department of

the Imperial Tobacco Company, where for the last 30 years he was in charge of transportation and outdoor advertising. Mr. Dixon started in advertising 45 years ago with the Great Northern Railway and later with the London & North Eastern Railway. The accompanying illustration shows Mr. Dixon with Mr. J. H. Brebner, Public Relations Adviser to the British Transport Commission and President of the Committee, and Miss M. Wenmoth, of Griffiths & Millington Limited, Chairman of the Committee.

North Eastern Region Footplatemen's Mutual Improvement Competition.—In the final of the North Eastern Region locomotivemen's mutual improvement quiz competition for the 1956/57 session, which took place at York, the team from Hull Botanic Gardens gained first place with 59 points. Runners-up were Mirfield with 47½ points and Sunderland with 44½ points. Mr. T. H. Summerson, Chairman of the North Eastern Area Board, who was accompanied by Mr. H. A. Short, General Manager, North Eastern Region, presented the awards. Congratulating the winners, he said he had confidence in the Hull team representing the North Eastern Region worthily in the inter-Regional contests which form the next stage of the competition. Mr. F. H. Petty, Motive Power Superintendent, North Eastern Region, was question master.

Formation of Lloyds-Brake Shoe Limited.—A year ago it was announced that an arrangement had been reached between F. H. Lloyd & Co. Ltd. and the American Brake Shoe Company for a joint venture in Great Britain. This has now been implemented by the registration of a new company designated as Lloyds-Brake Shoe Limited, with a capital of £100,000. This company is to take over all the share capital of the F. H. Lloyd & Co. Ltd. wholly-owned subsidiary, Lloyds (Burton) Limited, at an agreed valuation which is in excess of the amount at which this subsidiary stands in the consolidated accounts of F. H. Lloyd & Co. Ltd. The object of this agreement is to operate foundry processes and techniques extensively used by the American Brake Shoe

Company Engineered Castings and Electro-Alloy Divisions in the U.S.A. The new company is entering into licensing and technical aid agreements covering the whole range of products which are manufactured by these two divisions of the Brake Shoe Company. The sales areas conceded to the new company are the whole of the Commonwealth and Europe.

Railway & General Engineers.—The directors of the Railway & General Engineers, controlled by H. J. Baldwin & Co. Ltd., propose to convert and sub-divide the £1 5½ per cent cumulative preference shares into 2s. ordinary shares.

Railway Benevolent Institution.—At a meeting on January 22 the Board of the Railway Benevolent Institution granted annuities to 10 widows and four members involving an additional liability of £300 per annum. Fifty-four gratuities were also granted amounting to £440 to meet cases of immediate necessity. Grants made from the Casualty Fund during the month of December, 1956, amounted to £1,255.

Charles Churchill & Co. Ltd.—Sales by Charles Churchill & Co. Ltd. were reported recently to have been well maintained during the first six months of the current year by the parent and the group as a whole, and group profits were little changed on the same period of last year. Mr. J. B. S. Gabriel, the Chairman, has stated that for the first three months the intake of new orders for machine tools was good, but for the next three months it declined. While there had been an improvement since the end of September, the board expects that the volume will fall short of the high level achieved for the previous year.

Triple Collision at Chapel-en-le-Frith.—On February 10 a runaway goods train which had left Buxton at 11.5 a.m. ran away and crashed into the rear of the 8.45 a.m. Rowsley to Edgeley goods train in Chapel-en-le-Frith station. The driver had told the fireman to jump and attempt to apply wagon brakes as the train went by. He managed to apply seven brakes but the train collided at high speed with the rear of the train in front, killing the driver, who had remained on the engine, and also the guard of the Edgeley train. Passengers in a diesel train standing on an adjoining track in the station were warned to leave when the goods train was seen running down a gradient towards the station and although the front of the diesel train was damaged, no-one was hurt. The tender of the engine of the runaway train demolished the signalbox, but the signalman was only slightly hurt. The line was blocked with wreckage and a bus service was introduced between Buxton and Whaley Bridge.

Scottish Region Iron Ore Wagons.—The first of 270 iron ore wagons for the Scottish Region, was completed recently at the Shildon Wagon Works, North Eastern Region. The wagons, which were specially designed by British Railways in co-operation with Colvilles Limited, have a capacity of 730 cu. ft. and will be used in conjunction with the firm's £20 million expansion project to increase the output of steel in Scotland. They will convey imported iron ore from General Terminus Quay on the Clyde, to the firm's Clydebridge Steel Works, Rutherglen, and the new steel-works at Ravenscraig, Motherwell. At a ceremony at Shildon last week, Sir Ian Bolton, Chairman of the Scottish Area



Mr. Stanley Dixon with Mr. J. H. Brebner and Miss M. Wenmoth, on the occasion of the Public Service Vehicle Advertising Committee luncheon to Mr. Dixon

Board, presented a plaque, commemorating the completion of the 270th wagon, to Sir Andrew McCance, Chairman & Managing Director of Colvilles Limited. Others present included Mr. A. C. E. Poole, Works Manager, Shildon; and Mr. G. H. Kitson, Member of, and representing, the North Eastern Area Board.

Brown Bayley Steels Limited.—In spite of a fall of £135,511 in profits, Brown Bayley Steels Limited are raising their dividend for the year ended September 30, 1957, 6 to 9 per cent from 8 per cent for 1954-55, with a final payment of 6 per cent (5 per cent). Profits declined to £502,168 (from £637,679). After deducting tax of £230,050 (£321,262) and crediting tax provision no longer required of £17,198 (£16,397), net profit was £289,316 (£332,814).

Inclusive Rail & Hotel Tickets.—The Scottish Region is introducing a new facility for visitors travelling from the West of Scotland to spend the Easter weekend in Blackpool. The scheme makes possible a weekend covering rail travel with a guaranteed seat in both directions, with reserved accommodation in a choice of boarding houses or hotels. The inclusive charge varies according to the accommodation selected from 85s. to 100s., from Glasgow and district railway stations. Accommodation will be reserved from breakfast on Easter Saturday until lunch on Easter Monday, both meals inclusive. Special trains with cafeteria cars will leave on the evening of April 19, from Glasgow Central and 14 other stations in the Glasgow area; the return journey from Blackpool will begin on the afternoon of April 22.

Inaugural Run of the "Royal Duchy."—Mr. R. F. Hanks, Chairman of the Western Area Board, who, as recorded in last week's issue, travelled from Paddington in the "Royal Duchy" express (1.30 p.m. Paddington to Penzance) on its inaugural run on January 28, is shown greeting the driver in the accompanying illustration. With him are seen Mr. K. W. C. Grand, General Manager, and (extreme right) Mr. S. G. Hearn, Chief Operating Superintendent of the Western Region, both of whom also travelled in the

train, and Mr. Patrick Kingsley, Secretary of the Duchy of Cornwall. The cover of the restaurant car menu card is typical of several such designs in principal expresses of the Western Region.

Pondichery Railway Co. Ltd. Change of Address.—The Pondichery Railway Co. Ltd. office address is now: 8th Floor, Walbrook House, London, E.C.4. The telephone number remains the same: Mansion House 7992.

Vacu-Blast in France.—Vacu-Blast Limited, manufacturers of mobile dust-free shot blast machinery, have established a company in France. The company is known as Société Vacu-Blast (France) and its address is 46, Rue Anatole France, Levallois-Perret (Seine).

Nickel Industry in 1956.—The year 1956 was one of the most eventful in the history of the nickel industry, according to a recent statement by Dr. John F. Thompson, Chairman of the Board of the International Nickel Co. of Canada Ltd. Free world nickel production was at a record level of 450,000,000 lb. The year marked the beginning of the development in Manitoba by International Nickel of the world's second largest nickel production operation, which will result in a substantial increase in nickel supplies by 1960. It also saw the U.S.A. arrange for the diversion to industry of substantially increased quantities of nickel originally scheduled for shipment to the Government stockpile. The new Manitoba plant, with improvements at the Sudbury District plant, will bring the nickel-producing capacity of International Nickel to 385,000,000 lb. a year.

Formation of a New Company.—The A.E.I.-John Thompson Nuclear Energy Co. Ltd., and the Morgan Crucible Co. Ltd. are forming a joint company, Nuclear Graphite Limited, which will specialise in the machining of graphite blocks for the construction of the massive graphite moderator piles in atomic reactors, similar to those in use at Calder Hall. The company is being formed to meet the increasing demand for large machined graphite blocks of intricate shape to close

dimensional limits. The rapid expansion of atomic power generation demands a large increase in production capacity and it is now necessary to lay down additional plant. This will provide machining capacity to cover likely expansion in the British nuclear power programme and for overseas orders. A site is being prepared and preparatory work is already well advanced. The Morgan Crucible Co. Ltd. is engaged in the development and manufacture of many special materials and components for use in the atomic field; other members of the group are supplying a variety of products.

B.E.T. Omnibus Limited Dividend.—B.E.T. Omnibus Services Limited has announced the decision to pay a dividend on the £2 million issued 5½ per cent redeemable cumulative second preference stock at the rate of 5½ per cent per annum, less income tax, for the half year, ending April 30, 1957.

Overnight "Car-Sleeper Trains."—British Railways this summer are again providing "car-sleeper" services to and from the Continent and Scotland. The "Continental Car-Sleeper" will run from Newcastle to Dover and Boulogne, calling at York, every Wednesday from June 19 to September 11, with a return service from Boulogne every Thursday, June 20 to September 12. The "Highlands Car-Sleeper" will run from York to Inverness, calling at Newcastle, every Friday, from June 21 to September 13, with a return service from Inverness every Saturday, from June 22 to September 14. This summer, sleeping coaches with four-berth compartments are to be provided and Newcastle will be included as an additional loading point for cars. In addition, the "Car-Sleeper Limited" between Kings Cross and Perth is to enter service on Sundays only from March 31 until May 5 (Easter Sunday, April 21, excepted); this train will, however, be provided on April 18 and 22; there was no comparable service during April of last year. The nightly service (Fridays excepted) will begin on May 6, a fortnight earlier than in 1956, and continue until September 28. A Saturdays only service will be available on October 5, 12 and 19.



Mr. R. F. Hanks greeting the driver of the "Royal Duchy" before departure from Paddington. The restaurant car menu card cover (right) embodies the arms of the Duchy of Cornwall



Forthcoming Meetings

- Open currently and until further notice.—British Transport Commission: Historical Exhibition "Transport Treasures" in Shareholders' Meeting Room, Euston Station, from 10 a.m. to 6 p.m. on weekdays, and 2 to 6 p.m. on Sundays. Admission 6d.
- February 19 (Tue.).—Institute of Transport, Humberside Section, at the Chamber of Commerce & Shipping, at 7.30 p.m. Paper on "Twentieth century transport," by Major-General G. N. Russell.
- February 19 (Tue.).—Institution of Railway Signal Engineers, London Section, at the Institution of Electrical Engineers, Savoy Place, London, W.C.2, at 6 p.m. Paper on "Radio and television aids to railway operation," by Brigadier E. J. H. Moffett, Pye Telecommunications Limited.
- February 19 (Tue.).—Institute of Transport, York & District Graduate & Student Society, in Room 33, Railway Headquarters Offices, Toft Green, York, at 7 p.m. Debate with the junior section of the York Railway Lecture & Debating Society.
- February 19 (Tue.).—Institute of Transport, Metropolitan Graduate & Student Society, at 80, Portland Place, London, W.1, at 6.15 p.m. Discussion on "Public relations in transport," introduced by Mr. R. M. Robbins.
- February 19 (Tue.) to Feb. 21 (Thu.).—Institution of Mechanical Engineers, at 1, Birdcage Walk, Westminster, S.W.1, at 7.30 p.m. Conference: "The mechanical engineer's contribution to clean air," at Central Hall, Westminster, S.W.1.
- February 20 (Wed.).—Institute of Transport, Irish Section, at the United Services Club, Dublin, at 7.30 p.m. Annual dinner and visit of President.
- February 21 (Thu.).—Institute of Transport, Northern Ireland Section, at Belfast Castle, Belfast. Annual dinner and visit of President.
- February 21 (Thu.).—Diesel Engineers & Users Association, at Caxton Hall, Westminster, London, S.W.1, at 2.30 p.m. Paper on "Pressure charging of small C.I. engines," by Mr. Norman Anderson.
- February 22 (Fri.).—Institution of Railway Signal Engineers, Bristol Section, at Westinghouse Brake & Signal Company's works, Chippenham, at 5.45 p.m. Paper on "Principles of work study," by Mr. W. McKenzie.
- February 22 (Fri.).—Annual Re-union Dinner—Officers of the Royal Engineers Army Emergency Reserve (Transportation), at the Cafe Royal, Regent Street, London, W.1.
- February 26 (Tue.).—Institution of Mechanical Engineers, at 1, Birdcage Walk, Westminster, S.W.1, at 6.45 p.m. Steam group discussion: "Conversion from coal to oil firing."
- February 27 (Wed.).—Institution of Electrical Engineers, at Savoy Place, London, W.C.2, at 5.30 p.m. Paper on "Mechanical strength of power transformers in service," by Mr. E. T. Norris.
- February 27 (Wed.).—Institution of Locomotive Engineers, at the Institution of Mechanical Engineers, 1, Birdcage Walk, London, S.W.1, at 5.30 p.m. Paper on "Some aspects of locomotive boiler feedwater treatment," by Mr. A. J. Parsons jointly with Mr. J. S. Hancock.
- February 28 (Thu.).—Institution of Elec-

trical Engineers, at Grosvenor House, Park Lane, London, W.1, at 7 for 7.30 p.m. Annual dinner.

February 28 (Thu.).—The Model Railway Club, at Caxton Hall, Westminster, S.W.1, at 7.45 p.m. Talk on "The Carlisle & Settle Railway," by Mr. N. Wilkinson.

Railway Stock Market

Among foreign rails, Costa Rica ordinary stock eased slightly, changing hands down to 26½, with the 6½ per cent second debentures quoted at 84½ and the first debentures at 75. Chilean Northern first debentures attracted rather better demand and have been dealt in up to 46½. Guayaquil & Quito 5 per cent bonds were again 92 with the assented bonds at 72.

Antofagasta ordinary stock has eased from 32½ a week ago to 31½, at which there is a yield of over 12½ per cent on the basis of last year's 4 per cent dividend. Despite the cautious views expressed by the chairman, Mr. H. C. Drayton, in his last annual statement, there seems a possibility of a higher dividend for the current year, and if it is merely maintained, investors would get a good return for their money at the current price of the stock. Break-up value of this stock is generally believed to be well over the 100 level. Estimates of this kind are of course largely of academic interest, though in the event of take-over or nationalisation developments, they immediately become of first-rate importance to stockholders. There are no grounds for expecting any moves of this sort at the present time, but stockholders have the satisfaction of knowing that should they come about at some time in the future, they have a stock which could have scope for substantial capital appreciation. Antofagasta preference stock held last week's improvement to 46½. The 4 per cent debentures were quoted at 47½ and the 5 per cent (Bolivia) debentures at 91½.

United of Havana second income stock eased fractionally from 8 to 7½ with the consolidated stock unchanged at 2½. Brazil Railway bonds eased to 5½. Nitrate Rails shares held their improvement to 21s. 3d. and Taltal Railway shares remained at the rather lower price of 11s. 6d. recorded a week ago. San Paulo Railway 3s. units were again 3s. 1½d. Paraguay Central prior stock was quoted at 14. Dorada ordinary stock and debentures were again quoted at 50½ and 107½ respectively and International of Central America common shares at 32½. Elsewhere, Mexican Central "A" bearer debentures strengthened to 69.

Reflecting the easier Wall Street trend, Canadian Pacifics were \$59½, compared with \$61½ a week ago, while with the yield of over 6 per cent still attracting better demand, the 4 per cent preference stock at £64½ more than held its recent rise; the 4 per cent debentures were £72½. White Pass shares eased to \$18½.

Rather more business was passing in the locomotive building and engineering section, with Beyer Peacock still favoured because of the yield of over 7 per cent, and the price has risen to 44s. 6d. compared with 42s. 9d. a week ago. Charles Roberts 5s. shares, which yield more than 6 per cent on the basis of last year's 15 per cent dividend, also attracted buyers and were 12s. 6d. compared with 11s. 6d. a week ago. Hurst Nelson remained at 36s. 6d. at Glasgow. Birmingham Carriage

strengthened from 18s. 1½d. to 18s. 6d. at which there is a yield of over 10½ per cent, last year's dividend having been 10 per cent.

Gloucester Wagon 10s. shares were firm at 13s. 6d. with Wagon Repairs 5s. shares up to 13s., compared with 12s. 3d. a week ago. G. D. Peters remained at 30s. In other directions buyers were still in evidence for Ruston & Hornsby, which strengthened afresh from 33s. to 33s. 9d. John Brown shares have been firm at 37s. on the acquisition by the company of the 50 per cent balance of the shares in Costain-John Brown, which has drawn attention to the widening activities of John Brown. Vickers have rallied to 41s. 9d. and Guest Keen rose further to 49s. 6d. Electrical equipment shares rallied, Associated Electrical from 55s. 9d. a week ago to 68s., General Electric from 54s. 8d. to 56s., and English Electric from 51s. 9d. to 53s. 9d. The market is still talking of prospects of a new issue by English Electric. Steel shares have been steadier.

OFFICIAL NOTICES

SERVICE ENGINEER. preferably with sound knowledge of Wilson Gearboxes and Railway operation, required by manufacturers in connection with British Railways' Diesellisation programme. Self-Changing Gears Limited, Lythalls Lane, Coventry. Tel. 89081.

DRAUGHTSMEN, SENIOR and JUNIOR, preferably with railway experience or automotive experience, required for Drawing Office situated in London area, N.W.10. Apply in writing, giving age, details of experience and salary required, to General Manager, British United Traction Limited, 14, Hanover Square, London, W.1.

ENGINEERS and DRAUGHTSMEN, Civil Engineering, with experience of railway work wanted for Consulting Engineers, Westminster office. Pension scheme, 5-day week. Luncheon and Sports Clubs. Apply with full particulars of age and experience to Box 695, c/o Charles Barker & Sons Limited, Gateway House, London, E.C.4.

SENIOR REPRESENTATIVE required in London area for Company engaged in the production of Forged Steel Products for Railway, the Motor Trade, Aircraft and General Engineering. Exceptional opportunity for first class energetic man with ability to negotiate at the highest level. Technical training an advantage. Salary commensurate with experience. Box 245, The Railway Gazette, 33 Tophill Street, London, S.W.1.

MAKE a name for yourself! Progressive company with wide interests in automobiles, aircraft, railways and general engineering seeks **DESIGNER-DRAUGHTSMAN** who will have unlimited opportunities and every encouragement to give expression to his ideas. The company is in Leicester which has excellent residential areas, first-class educational and shopping facilities. An attractive salary is offered and there is a pension scheme. Applications in confidence to the Chief Technical Engineer, Metalastik Limited, Leicester.

PERMANENT-WAY INSPECTOR aged 35/40 required by Mining Company in WEST AFRICA for privately owned railway, wide experience of track maintenance and inspection essential. Commencing salary £1,050 per annum plus 5% bonus plus, for married man, £10 per month marriage allowance and £5 per month for each child under 18. Retirement under contributory Pension Scheme at age 55. Tours of duty are approximately 15 months followed by liberal leave on full salary in U.K. Return passage paid, free furnished quarters and medical attention. Life Assurance and Dependents Income Schemes. Write giving full particulars with copies references stating age married or single to Siebe-Loane Development Co. Ltd., Dept. P10, City Gate House, Finsbury Square, E.C.2.

THE Director General of India State Department, Government Building, Bromyard Avenue, Acton, London, W.3, invites tenders for the supply of: 15,000 TYRES (C & W) 2 ft. 4½ in. on tread (M.G.) to Rolled Size. Forms of tender may be obtained from the above address on or after the 15th February, 1957, at a fee of 10s. which is not returnable. If payment is made by cheque, it should please be made payable to "High Commissioner for India." Tenders are to be delivered by 2 p.m. on Monday 1st April, 1957. Please quote reference No. 218/56/RLY.

THE Proprietors of Patent No. 660849 "Improvements in or relating to Brake Beams" desire to secure commercial exploitation by Licence or otherwise in the United Kingdom. Replies to Haseltine Lake & Co., 28 Southampton Buildings, Chancery Lane, London, W.C.2.

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